Summary

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Introduction

The Final Environmental Impact Statement (FEIS) discusses the alternative strategies for management of the Malheur National Forest, one of which is developed into the Land and Resource Management Plan (Forest Plan) The Draft Environmental Impact Statement was published in draft form for public review and comment Subsequently, responding to and incorporating these public comments, this Final Environmental Impact Statement and Forest Plan have been prepared The Forest Plan, unless revised sooner, will be in effect for 10 to 15 years

This is a general summary of the entire Final Environmental Impact Statement It emphasizes the issues and concerns raised by the public and local, State, and Federal agencies regarding the management of the Malheur National Forest It briefly describes the purpose and need for the Final Environmental Impact Statement, the six alternatives, the affected environment, and the environmental consequences of implementation of each of the alternatives

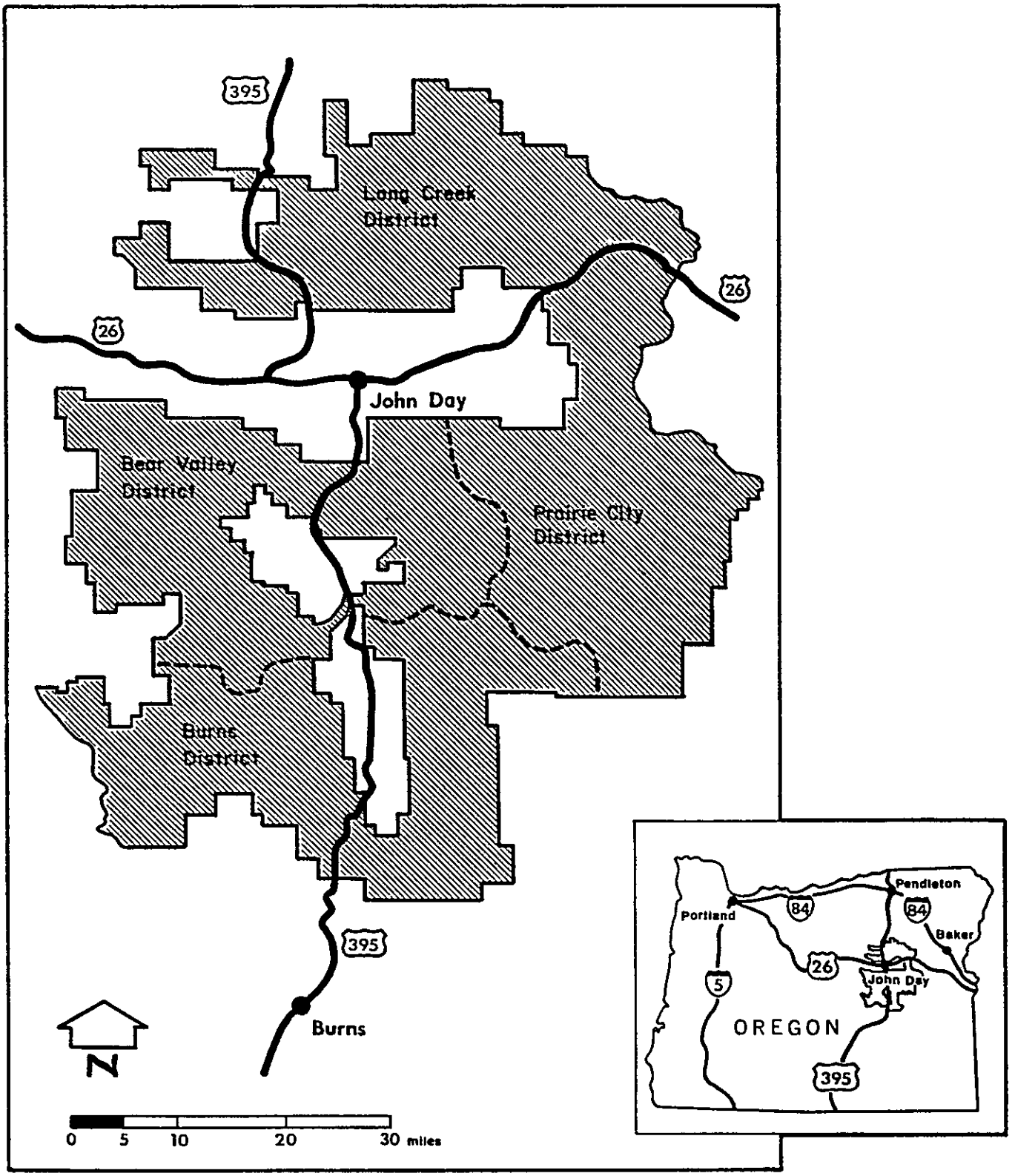
B The Malheur National Forest

The Forest's 1,459,422 acres are located in eastern Oregon, approximately equidistant from the borders of Washington, Idaho, and Nevada The Strawberry Mountain Range, part of the Blue Mountains, extends east to west through the center of The Forest This range splits the Forest into two geologic provinces–the Columbia Basin to the north and the Great Basin to the south. Elevations on the Forest vary from 3,900 feet at the Forest boundary south of Mt Vernon, Oregon to 9,038 feet on top of Strawberry Mountain The result is a diverse and productive landscape of grasslands, sage, and juniper, forests of pine, fir, and other tree species, and mountain lakes and meadows

The northern portion of the Forest is drained by the John Day River system into the Columbia River Basin The southern part of the Forest is drained principally by the Silvies River system into the Great Basin and by the Malheur River system into the Snake River

These lands are in Grant (1,119,161 acres), Harney (293,876 acres), Baker (45,786 acres), and Malheur (599 acres) counties The Forest is within a day's drive from Portland, Oregon U.S 26 and U S 395, winding two-lane, rural highways, are the principal access routes There are two main population centers the John Day Valley from Dayville to Prairie City, and a 5-mile radius around Burns

FIGURE S-1: General Location Map



C Purpose and Need

The purpose of the Forest Plan is to direct all natural resource management activities on the Forest Preparation of the Forest Plan is required by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA), and the associated National Forest System Land and Resource Planning Regulations (36 CFR 219 - Refers to Part 219 of Title 36 of the Code of Federal Regulations dated 9/30/82)

The preparation of an Environmental Impact Statement disclosing a preferred alternative and a broad range of additional alternatives is required by the National Environmental Policy Act of 1969 (NEPA), the Council of Environmental Quality (CEQ), NEPA Regulations (40 CFR 1500), and the implementing regulations of NFMA (36 CFR 219) This Environmental Impact Statement is required because the Forest Plan is a major federal action with a significant effect on the quality of the human environment Its purpose is to describe effects on the environment in enough detail to aid in the selection of management direction for the Forest. Equally important, its purpose is to make this same information available to the public, and to encourage public participation in the development and refinement of that information.

Planning Process

The National Forest Management Act implementing regulations require that several planning steps be used to develop the Environmental Impact Statement and the accompanying Forest Plan These planning steps are

1 Identification of issues, concerns, and opportunities
2 Development of planning criteria
3 Inventory of data and collection of information
4 Analysis of the management situation
5 Formulation of alternatives
6 Determination of estimated effects of the alternatives
7 Evaluation of alternatives
8. Selection of the proposed action
9 Plan implementation
10 Plan monitoring and evaluation

Issues, Concerns, and Opportunities (ICO's)

Different people and groups prefer to see the Forest managed to emphasize different outputs, uses, and conditions Because all the resources, uses, and conditions of a Forest are interconnected, management decisions to emphasize some resources result in changes in others There are practical and natural limits to what a Forest can provide These different preferences of individuals and groups and the physical, biological, and legal limits of Forest management are identified in the issues and concerns which guide the Forest planning process

Public issues and management concerns were identified through citizen participation including public meetings, requests for comments, and personal contacts with individual members of the public, owners of adjacent private land, other agencies, local industry and conservation groups, and Indian tribes The process used to identify and define the issues, concerns, and opportunities is presented in more detail in Appendix A of the Final Environmental Impact Statement

During the early planning stages, over 30 issues and concerns were identified Some issues were beyond the jurisdiction of the Forest Service, resolved by existing laws, or best handled on a case-by-case basis These issues are not addressed in this Environmental Impact Statement The remaining issues and concerns, which indicated a need to examine current management direction, were then grouped based on common elements and similarities Described on the following pages are the issues that guided the Forest planning process

ECONOMIC STABILITY: How will management of Forest resources affect local communities?

The Malheur National Forest comprises about 39 percent of Grant County's acreage and 5 percent of Harney County's acreage, as well as small acreages in Baker and Malheur Counties Because of the substantial acreages, distinct economic ties, and the people's use patterns, the Forest's primary zone of influence has been determined to be Grant and northern Harney counties

Malheur National Forest policies have a direct impact on local, dependent industries which in turn affect business income, wages, employment, and revenues to the counties The principal industries in the Forest's zone of influence are wood manufacturing, agriculture (i e., ranching), and retail trade These three industries account for about half of all employment in the area Another large part of the economy is government employment, and much of that is also based on timber and livestock management

Forest management activities and the resulting outputs influence job opportunities, incomes, and the way of life of the approximately 15,000 residents in local communities It follows that changes in Forest outputs and activities will affect the social and economic life of the local population

Economic stability is acknowledged to be very important, and social stability is strongest when the local industries are healthy Some people equate stability with a sustained supply of Malheur National Forest timber adequate to meet the demands of local industry Some also think that the counties have been too dependent on timber manufacturing, and that a more diversified economy should be cultivated, including growth in tourism Currently, most tourism occurs during the fall hunting season

The Malheur National Forest also plays a role in county finances through payment of 25 percent of its revenues to the counties This money, of which 99 percent is from timber-generated receipts, has a significant effect on the finances of county schools and roads In 1989, Grant County received $8.7 million and Harney County received $2 3 million from resource utilization on the Malheur National Forest

Indicators of Response

-Changes in jobs and income (first decade and long-term change)
-Payments to counties (first decade)

TIMBER MANAGEMENT: What level of sustained annual yield of timber products should the Forest provide while still maintaining Forest productivity and meeting local, regional, and national needs? How much timber land should be managed for wood fiber production; what species should be favored; and what management methods should be used to achieve the desired harvest level and species mix?

The Forest has been providing timber products to the local and national market for over 70 years. The average annual volume of timber sold over the last 10 years (1980-1989) has been 228 million board feet per year During this period, the goal of the timber sale program on the Forest has been to gradually increase the annual volume sold to reach 270 million board feet by 1990 in order to have an average annual sell volume of 230 million board feet over the decade 1980-1990 (Malheur National Forest 1979 Timber Resource Management Plan) It appears that the timber sales program has come very close to meeting those objectives This planned increase is within the physical ability of the Forest to produce timber.

An analysis of the Forest's ability to produce timber indicated that the Forest could supply up to 59 1 million cubic feet (about 326 million board feet in the first decade) per year on a nondeclining flow harvest schedule

The ability to increase future timber supply levels could have future implications for the local timber industry which is almost totally dependent on the Forest for its supply of raw material Resource Planning Act National and Regional projections show an increasing demand for timber in future decades This National and Regional increase in demand for timber could increase demand for Malheur National Forest timber.

The primary timber-producing species are ponderosa pine, Douglas-fir, western larch, true firs, and lodgepole pine In the past, the majority of the volume sold has been from mature, open ponderosa pine stands (approximately 70 percent of the total volume sold), especially those found in fairly level, easily roaded areas However, available areas for timber harvest are increasingly found in steeper areas forested predominantly with Douglas-fir, western larch, white fir, and grand fir As timber stands are brought under management, trees of all species would be harvested at ages ranging from 50-150 years to maximize the utilization of the wood fiber production potential of the Forest Most trees are currently harvested at ages of 200 years and older

Management of the timber resource interacts with every other resource on the Forest The interrelationships are sometimes complementary, sometimes competitive, and sometimes mutually exclusive Rising demands for other resource uses are increasing the complexity of timber management

The management methods which would provide the largest amount of wood fiber to meet national demands would provide this wood fiber primarily in smaller-diameter, mixed conifer species Although the local and sub-regional timber industry is anticipating and planning for this shift in product, some industry members express concerns because their mills are currently set up to process larger-diameter trees and they have a more favorable market position with old-growth ponderosa pine Local residents, hunters, and Forest visitors desire the appearance of mature, ponderosa pine stands and express concerns about the appearance and success of clearcuts on the Forest County and State officials and private landowners emphasize the need for intensive management of the existing mixed conifer understory, particularly to reduce the losses related to spruce budworm and other insect damage

Competing demands for Forest resources are exemplified by the demand for wilderness and roadless areas which preclude timber management This is described in a separate issue

The relationship between big-game habitat and timber management is very complex This is also described in a separate issue

Additional Timber Issues Identified During the Public Comment

A large portion of the public expressed concern about the following items These issues were considered in the analysis and alternative development (Alternatives B-Modified, C-Modified and I) done between the issuance of the Proposed Forest Plan and the preparation of the final planning documents The process for the development and use of planning issues can be found in the Final Environmental Impact Statement (Appendix A, Section C) In addition, public comment summaries and Forest Service responses for each issue can be found in this Final Environmental Impact Statement (Chapter V, Section C)

1. Uneven-aged management - The public expressed a dislike for even-aged management in general and clearcutting in particular They also expressed belief that uneven-aged management better protects all resources

2. Species mix - There was concern expressed about the shift in species mix over the next 80-100 years

3 Forest character - The public generally had support for the maintenance of the existing Forest character, including an emphasis on ponderosa pine.

Indicators of Response·

-Suitable timber land in thousands of acres
-Allowable sale quantity (1st and 5th decades)
-Suitable timber land under ponderosa pine management (thousands of acres)
-Percent ponderosa pine volume offered (1st and 5th decades)
-Acres clearcut (1st and 5th decades)
-Acres overstory removal (1st and 5th decades)
-Acres in uneven-aged management (1st and 5th decades)
-Size of average tree harvested (over the planning horizon)

BIG-GAME HABITAT MANAGEMENT What level of big-game habitat must be provided to meet the needs for desirable big-game herd levels?

Elk populations prior to 1970 were relatively stable but low. During the past decade, populations have steadily increased to a current summer population of about 6,600 elk; about one-third of these elk winter on the Forest Management of big-game herd levels is the responsibility of the State of Oregon, Department of Fish and Wildlife (ODF&W) while the USDA Forest Service manages the habitat occurring on the Forest Mule deer populations have fluctuated during the past 40 years and are currently on a downward trend in two of the seven game management units which include the Forest The limiting habitat factor on big-game populations is winter range Management of big-game winter range for elk is believed to provide for the wintering needs of mule deer as well since available mule deer winter range is minimal and overlaps with elk winter range.

Most of the winter ranges have adequate forage (grass and grass-like species) to carry both the present number of livestock and the present number of wintering elk. Ranchers on private land adjacent to the Forest are concerned about the movement of elk off of the Forest to winter and spring range on private land. The increased potential of the Forest to carry larger populations of elk will also increase the potential for more elk to winter on private land. The State management objective, for big-game populations in game management units which occur on the Malheur National Forest, is to supply winter habitat for approximately 2,865elk

The wildlife issue of most concern to the public deals with elk habitat for elk hunting opportunities Much of the Forest's recreation use occurs during the deer and elk hunting seasons. Most local, and many regional and statewide residents and hunter's groups, are concerned about Forest management activities and their effect on elk numbers and hunting opportunities.

To meet the needs of a given population of big game, habitat quality is determined by the appropriate mix of cover, forage, and open road density (security from disturbance) Timber management activities have at times improved, and can be designed to further improve, the balance and distribution of cover and forage–so, with adequate road management, the elk population is expected to increase

Oregon Department of Fish and Wildlife population objectives for the elk herds, hunter success rates, and the need to limit hunting opportunities in certain units, are related to the anticipated effects of Forest management of the habitat. For example, in addition to total population objectives, Oregon Department of Fish and Wildlife has objectives for bull-to-cow ratios for each herd at the end of the hunting season To ensure that not too many bulls get harvested, the Forest Service must limit access (by closing roads) or

Oregon Department of Fish and Wildlife must keep the success rates at a level that will meet their population objectives by limiting the number of hunters The Forest activity that most affects the management actions of Oregon Department of Fish and Wildlife to meet its population objectives, is the control of access for hunters using motorized vehicles

Additional Big-Game Issues Identified During the Public Comment

A large portion of the public expressed concern about the following items. These issues were considered in the analysis and alternative development carried forward between the issuance of the Proposed Forest Plan and the preparation of the final planning documents The process for the development and use of planning issues can be found in the Final Environmental Impact Statement (Appendix A, Section C) In addition, public comment summaries and Forest Service responses for each issue can be found in this Final Environmental Impact Statement (Chapter V, Section C)

1. Winter range There was concern about winter range management, timber yields from winter range, and winter range improvement practices

2 Minimum cover requirements There was public concern that minimum cover requirements for summer and winter range may be too low and the definition of thermal cover may not be sufficient

3 Road closure policy The public expressed concern over the lack of a specific road closure policy in both summer and winter range

4 Habitat modeling process There was concern about the habitat modeling process in general, and the use of cover forage ratios in particular

5 Population goals There was a desire for population goals by winter range area

Indicators of Response

-Potential summer elk populations (1st and 5th decades)
-Potential winter elk populations (1st and 5th decades)
-Habitat Effectiveness Index (1st and 5th decades)
-Big game cover quality (1st and 5th decades)
-Fish and Wildlife User Days (WFUDs) (1st and 5th decades)
-Acres in winter range enhancement
-Acres in winter range maintenance
-Miles of road remaining open (1st and 5th decades)

RIPARIAN AREAS: What effect will Forest management activities have on riparian areas; what level of fisheries habitat productivity should be maintained; what level of timber harvest is compatible with riparian values; and what level of livestock grazing can be provided while managing for riparian dependent resources?

Riparian areas are ecosystems which are identified by vegetation requiring free or unbound water They include the stream and an adjacent area of varying width A critical portion of the total riparian area (the transition area and upland vegetation) is labeled the "riparian area of influence" The area of influence contains trees which may provide shade, contribute fine or large woody material to the stream channel, terrestrial insects to the stream, and habitat for the wildlife associated with the riparian management area Riparian areas create well-defined habitat zones within the much drier surrounding areas, they are more productive in terms of total numbers and variety of wildlife species and are rich in producing plant material Although they comprise a minor proportion of the overall area on the Forest, they are disproportionately important

Some people believe that overgrazing and unregulated livestock use of these areas result in a loss of streamside vegetation, increased water temperature, excessive bank erosion, and accelerated sedimentation of gravel fish-spawning areas These people have raised riparian management concerns to a national level, often calling for elimination of grazing They urge that these areas receive special attention in land management planning This is reflected in the special mention of riparian area management in the NFMA regulations.

Goals for riparian areas require a diverse and abundant riparian vegetation community and a stable stream channel to fully meet the objectives for riparian dependent resources Some of the riparian areas within the Forest are not in the desired condition to meet these many and varied management objectives A complete inventory of riparian conditions across the Forest does not yet exist; however, one is planned for completion within the next ten years The information currently available is based on a Watershed Improvement Needs (WIN) inventory and a variety of project level analyses Based on this information, about 235 stream miles have been identified as priority areas for rehabilitation (see Forest Plan, Appendix A). This list is dynamic, additional areas needing treatment to achieve desired riparian conditions will be added as the inventory work is completed and as additional problem areas are identified during project planning

Some of the characteristics of these streams are extensive areas of unstable eroding streambanks, lowering of the water table, and lack of adequate stream surface shading. Although uncontrolled logging practices, roads adjacent to streams, insect outbreak, and fire can influence shading and streambank stability, the largest impacts on stream temperature and stability on the Malheur National Forest appear to be due to a reduction of hardwoods caused by ungulate grazing With few exceptions, the majority of the gullies on the Forest also result from the loss of the stabilizing root system caused by a reduction in the hardwood community

There is generally a consensus that improving streams and watersheds, which are in a less than desirable condition, is beneficial for all resources and user groups, the cause of the decline, the specific methods and treatments used for improving the health of the stream systems, and the rate of improvement are some of the areas of contention and controversy There are opportunities for increasing the rate of improvement in riparian zones, however, these are perceived as reducing the amount of forage available for livestock grazing and reductions in removal of standing timber

Indicators of response

-Management strategies proposed for unsatisfactory riparian areas
-Animal-unit months of livestock grazing permitted
-Expected increases in anadromous fish production (pounds of fish)
-Smolt habitat capability index (1000s of steelhead smolts)

ROADLESS AREAS: Should some or all of the Forest's roadless areas remain roadless, be opened to roaded development, or be recommended to Congress for wilderness classification?

The Forest currently has 18 separate undeveloped areas comprising 180,948 acres Some people enjoy the recreation experience available in areas which have many characteristics of wilderness, but fewer restrictions Such areas can be characterized as providing semiprimitive, nonmotorized or motorized recreation opportunities Maintaining the undeveloped character would mean excluding such areas from regulated timber harvest and road construction In areas providing for motorized use, off-road vehicle use may continue, mineral exploration and extraction could continue in both types of area

Areas maintained in an undeveloped condition would also be eligible for future wilderness consideration National and regional environmental groups such as the Wilderness Society, Native Plant Society, and Oregon Natural Resources Council are philosophically

opposed to development of these areas, stating that in many cases there is no need for development and they should remain undeveloped rather than foreclose on future wilderness possibilities (One of these areas, Pine Creek, must be evaluated at this time for potential inclusion in the National Wilderness System as it was designated for further planning review by the RARE II Final Environmental Impact Statement) These same groups as well as local environmental groups, some hunters, and some local residents favor roadless management of these areas because they believe it protects sensitive plant species, wildlife habitat, and water quality better than management geared toward consumptive uses

Others, such as the mining and timber industry associations and businesses, many local residents, and local governments, state that the management of these areas has been in limbo long enough They want to access and develop the resources in these areas to end the uncertainty about their availability They state that the resources in these areas need to be managed so that they can contribute to local industrial and economic needs They believe that wildlife habitat can be improved and the vegetation will be in a more vigorous condition if the resources are managed for consumptive uses (primarily wood fiber production)

There are approximately 119,950 acres of tentatively suitable land in the RARE II areas These same acres provide 92,408 acres of old growth Timber management activities could occur on 107,658 acres Of these available acres, 101,205 acres would be considered suitable for timber harvest and would provide a first decade annual allowable sale quantity of 28 MMBF (4 9 MMCF) and a long term sustained yield capacity of 5 74 MMCF/yr

Indicators of response

-Acres retained in an unroaded condition (i e , semiprimitive motorized and nonmotorized management areas)
-Management of Pine Creek Further Planning Area

Additional Issues Identified During the Public Comment Period

Most of the issues identified during the public comment period were identical to or could be incorporated into the previously identified issues, as can be seen in in the previous paragraphs However, between the time that the preliminary issues were developed and the public comment period, road management became a key issue

ROAD MANAGEMENT: How can road management be used to make timber harvest, big-game habitat needs, and recreation opportunities more compatible?

Currently there are about 8,570 miles of Forest Service roads on the Forest Under Alternative F (the preferred alternative in the Draft Environmental Impact Statement), it was estimated that 870 miles of roads would be constructed and 1,360 miles of road would be reconstructed by timber purchasers during the first decade of the Forest Plan Of this total, approximately 400 miles would have been built in currently roadless areas that are assigned to specific road management policies in support of timber production Strong public response indicated that this was undesirable

The Malheur National Forest, in conjunction with the Oregon Department of Fish and Wildlife, has four cooperative travel management areas These seasonal road closures are designed to protect water quality and wildlife habitat, minimize harassment of wildlife, maintain adequate buck and bull escapement, and promote quality hunting During the hunting season, these management areas are under the "green dot system," enforced by the State Police and Game Commission Total National Forest land affected by these seasonal closures is approximately 172,000 acres

The Oregon Department of Fish and Wildlife and the public have expressed concerns about the lack of a specific policy for the Forest as a whole and for some resources in particular. General concerns included a belief that road densities are too high, that local roads should be closed and put back into resource production immediately following timber harvest, and that in many cases road construction and maintenance standards are too high

The greatest public concern is the road management policy in relation with big-game habitat and hunting Specifically, many expressed a desire to permanently or seasonally close roads to enhance big-game summer and winter range. Included in this was a desire to increase elk habitat effectiveness, provide elk escapement areas, and provide for a quality hunting experience (nonmotorized)

These issues were considered in the analysis and alternative development undertaken done between the issuance of the Proposed Forest Plan and the preparation of the final planning documents The process for developing and using of planning issues can be found in this Final Environmental Impact Statement (Appendix A, Section C) In addition, public comment summaries and Forest Service responses for each issue can be found in this Final Environmental Impact Statement (Chapter V, Section C)

Indicators of Response

-Miles of timber purchaser road construction (1st and 5th decades)
-Miles of open road (1st and 5th decades)
-Total miles of system roads (1st and 5th decades)

D. Development of Alternatives

In order to resolve the identified issues, the Forest Interdisciplinary Team gathered current information about Forest resources, analyzed the management situation, and formulated a set of alternatives. Ten alternatives were developed encompassing a full range of resource outputs and environmental effects. Each alternative is a combination of management areas, each of which has a unique set of management practices and scheduled activities Several management areas emphasize protection of fish and wildlife habitat and naturally occurring ecosystems; others emphasize sustained timber yields or various types of recreation and research opportunities Each alternative distributes Forest lands to management areas in different ways. The goals of each management area are displayed in Table S-1 and the acres by alternative are displayed in Table S-2

Each alternative is made up of land uses, management practices, and activity schedules which result in a unique combination of resource outputs, land uses, and environmental conditions The preferred alternative is selected from all those formulated as the one which maximizes net public benefits while responding effectively to the issues. The preferred alternative, selected by the Regional Forester, is Alternative I

All alternatives, except the No Change Alternative, meet or exceed the management requirements established by the Regional Forester These requirements are intended to ensure that water quality will be maintained at an acceptable level, that the necessary habitat is maintained to sustain viable populations of fish and wildlife, and created openings from timber harvest are limited in size and distribution

A brief description of each alternative, including a summary of goals, output objectives, and constraints that determine how the Forest would be managed, follows the discussion of management areas

Summary of Changes from Draft to Final Environmental Impact Statement

The following is a summary of changes made to the alternatives for this Final Environmental Impact Statement. These changes result from a concerted Forest effort to respond to comments related to alternative development received from the public and interested organizations during the Draft Environmental Impact Statement review process

Major changes to the analysis process resulted in several new developments Several key analytical methods have been updated or changed, in addition to restructuring the FORest PLANning (FORPLAN) model A Habitat Effectiveness Index (HEI) model has been used to estimate elk habitat and potential elk population differences between alternatives This HEI model is based on cover quality, spacing, forage quality and quantity, and open road density. As the previous model employed only cover to forage ratios to estimate elk habitat, substantial changes to previous alternative rankings has resulted More information on the details of the analysis approach is included in Appendix B of this FEIS

Changes to the FORPLAN model structure have resulted in a planning model that includes geographic specificity for seven major watersheds and cover outputs tied to timber stand manipulation. Anadromous and non-anadromous fishery watershed identification is now possible with this expanded model

Through a review of the analysis process, updating the modeling techniques, and in response to public comments, one entirely new alternative (Alternative I - Preferred) has been developed and two alternatives have been modified (Alternatives B-Modified and C-Modified) These are included in alternative evaluations for this EIS. In addition, five alternatives included in the Draft EIS have been deleted as viable options due to lack of broad support and their similarities to other developed alternatives (see Alternatives Considered but Eliminated from Detailed Study in Chapter II of this Final EIS)

In addition to the Habitat Effectiveness Index model used to estimate elk habitat, recalculations of wildlife-and-fish-user-days (WFUDs), fuel treatments, old-growth stands, and energy and mineral production potential have been made for all alternatives

For all alternatives, the baseline 10-year period for economic indicators has been updated to 1980-1989 This period is used to display timber volume sell and harvest levels, value and cost information related to Forest budgets, and potential changes in jobs by alternative This updates economic indicators to include very recently experienced levels. Also, new economic values and costs have been included which change the present net value (PNV) for all alternatives

Utilizing the new FORPLAN model structure, several analytical tasks were performed and compared to previous model results for similarities and differences In particular, a review of manageable understory stands was updated to 1989, where the impacts of insect and disease agents on the health and vigor of Forest stands were reassessed This analysis has indicated that stands on the Malheur National Forest are generally less manageable than previously reported Geographic identifiers tied to this newer information have helped portray specific health and vigor relationships in more detail For more information see Appendix B, Description of the Analysis Process

Discussions of the issues, concerns, and opportunities have been updated to include the additional issues identified during the public comment period (Final Environmental Impact Statement, Chapter I, section K) Specifically, a discussion of the road management issue has been added Also, additional indicators of response for timber management have been included.

Management Areas

Management areas are the building blocks of alternatives. By assigning land to a particular management area, the on-the-ground management to result from that alternative becomes apparent The assignment of lands to management areas identifies types and amounts of management activities that can occur on specific areas of the Forest. Management area goals are shown in Table S-1 and information about the acres assigned to each management area by alternative is shown in Table S-2.

The acreages shown in Table S-2 are actual acreage of land assigned to each management area Each acre of Forest land is assigned to only one management area

TABLE S-1: Management Area Goals

GENERAL FOREST - Manage for timber production and other multiple uses on a sustained-yield basis

RANGELAND - Manage for livestock forage production and other multiple uses on a sustained-yield basis

RIPARIAN - Manage to protect or enhance riparian-dependent resources in watersheds supporting fish.

NON-ANADROMOUS RIPARIAN - Manage to protect or enhance riparian-dependent resources in watersheds supporting resident fish

ANADROMOUS RIPARIAN - Manage to protect or enhance riparian-dependent resources in watersheds supporting anadromous fish

BIG-GAME WINTER RANGE MAINTENANCE - Manage to maintain usable forage for elk and deer on potential winter range

BIG-GAME WINTER RANGE ENHANCEMENT - Manage to enhance usable forage for elk and deer on potential winter range

BALD EAGLE WINTER ROOSTS - Manage to maintain or enhance winter roost habitat for bald eagles

STRAWBERRY MOUNTAIN WILDERNESS - Manage the wilderness values as specified by the Wilderness Act of 1964 and the Oregon Wilderness Act of 1984

MONUMENT ROCK WILDERNESS - Manage the wilderness values as specified by the Wilderness Act of 1964 and the Oregon Wilderness Act of 1984

SCENIC AREA - Manage to preserve and protect the outstanding natural esthetics of the Vinegar Hill - Indian Rock Scenic Area

SPECIAL INTEREST AREAS - Manage to preserve areas of significant historical, geological, botanical, zoological, paleontological, or other special characteristics.

RESEARCH NATURAL AREAS - Manage areas for nonmanipulative research, observation, and study of undisturbed ecosystems

SEMI-PRIMITIVE NON-MOTORIZED RECREATION AREAS - Manage to provide a wide range of semiprimitive nonmotorized recreation opportunities while protecting existing environmental quality Exclude new road construction

SEMI-PRIMITIVE MOTORIZED RECREATION AREAS - Manage to provide a wide range of semiprimitive motorized recreation opportunities while protecting existing environmental quality Exclude new road construction

DEVELOPED RECREATION SITES - Manage for developed recreation opportunities

OLD GROWTH - Manage old-growth habitat for dependent species

VISUAL CORRIDORS - Manage viewshed corridors with primary consideration given to their scenic quality and the growth of large diameter trees Visual quality objectives of retention, partial retention, and modification will be applied while providing for other uses and resources

UNIT PLANS WILDLIFE EMPHASIS - Manage to maintain or improve the area to support fish and wildlife populations

MINIMUM LEVEL MANAGEMENT - Provide the minimum management necessary to provide for resource protection and to ensure public safety Additional road construction will be allowed to manage adjacent areas

BYRAM GULCH MUNICIPAL SUPPLY WATERSHED - Manage to ensure that Oregon water quality standards for community public supply water use are met Protect existing beneficial uses of the water Protect and, where needed, improve the quality and quantity of the water resource in a manner consistent with National, State, and Forest goals

LONG CREEK MUNICIPAL SUPPLY WATERSHED - Manage to ensure that Oregon water quality standards for community public supply water use are met Protect existing beneficial uses of the water Protect and, where needed, improve the quality and quantity of the water resource in a manner consistent with National, State, and Forest goals

ADMINISTRATIVE SITES - Provide and maintain sites for facilities necessary for the administration of Malheur National Forest lands

WILDLIFE EMPHASIS AREA WITH SCHEDULED TIMBER HARVEST - Manage to provide for high quality wildlife and fish habitat and water quality Manage elk habitat to provide at least 70 percent of elk habitat effectiveness while allowing for scheduled timber harvest Provide opportunities for high quality semiprimitive dispersed recreation

WILDLIFE EMPHASIS AREA WITH NON-SCHEDULED TIMBER HARVEST - Manage to provide for high quality wildlife and fish habitat and water quality Manage elk habitat to provide at least 70 percent of elk habitat effectiveness Timber harvest will be on a non-scheduled basis and will be used only to meet a wildlife and or fish habitat objective Provide opportunities for high quality semiprimitive dispersed recreation

WILD AND SCENIC RIVER - Manage to maintain the unique wild and scenic character of the river segment in accordance with the Omnibus Oregon Wild and Scenic Rivers Act of 1988

TABLE S-2: Management Areas by Alternatives
(Acres)

	Alternatives					
	NC[1/] (No Change)	B Modified	A (No Action)	F (DEIS Pref)	I Preferred	C Modified
1 General Forest	922,563	775,479	657,726	618,456	553,053	478,973
2 Rangeland	N/A	109,919	141,702	105,840	99,203	82,989
3 Riparian Areas	3,707					
3A Non-Anadromous Riparian	N/A	21,706	18,567	19,779	19,268	17,047
3B Anadromous Riparian	N/A	33,954	31,185	32,132	28,092	24,722
4A Big-Game Winter Range Maintenance	0	76,599	0	194,141	177,406	115,764
4B Big-Game Winter Range Enhancement	0	0	0	0	0	35,145
5 Bald Eagle Winter Roosts	4,326	4,580	4,326	4,040	4,040	4,064
6A Strawberry Mountain Wilderness	68,700	68,700	68,700	68,700	68,700	68,700
6B Monument Rock Wilderness	12,620	12,620	12,620	12,620	12,620	12,620
6C Pine Creek Proposed Wilderness	0	0	0	0	0	5,420
7 Scenic Area	13,322	13,322	13,322	13,322	13,322	13,322
8 Special Interest Areas	312	312	312	312	246	312
9 Research Natural Areas	0	1,310	1,310	1,310	750	1,310
10 Semiprimitive Nonmotorized Recreation Areas	40,845	0	38,848	36,687	48,888	96,015
11 Semiprimitive Motorized Recreation Areas	0	0	0	9,536	14,578	77,250
12 Developed Recreation Sites	N/A	427	427	427	484	427
13 Old-Growth Habitat	123,587[2/]	43,600	40,800	50,090	72,690[3/]	47,930
14 Visual Corridors	66,720	183,244	212,953	178,380	186,682	263,762
15 Unit Plan Wildlife Emphasis Areas	154,883	0	102,974	0	0	0

1/The Timber Management Plan upon which the No Change Alternative is based was developed in 1979. The plan was not an integrated plan and consequently did not address all resource uses and outputs in an integrated manner As a result, these acreages are not directly comparable to the other alternatives Overlap among management areas for the NC Alternative cannot be added to equal the total Forest acres.

2/Potential old growth acres managed on three tier system with 260 year rotation so that approximately 1/3 of area is old growth at any one point in time.

3/Includes 25,000 acres of old growth replacement

TABLE S-2: Management Areas by Alternatives (continued)
(Acres)

	Alternatives					
	NC1/ (No Change)	B Modified	A (No Action)	F (DEIS Pref)	I Preferred	C Modified
16 Minimum Level Management4/	76,600	74,668	74,668	74,668	74,668	74,668
17 Byram Gulch Municipal Supply Watershed	N/A	300	300	300	300	300
18 Long Creek Municipal Supply Watershed	N/A	224	224	224	224	224
19 Administrative Sites	N/A	1,369	1,369	1,369	1,369	1,369
20 Wildlife Emphasis with Scheduled Timber Harvest	N/A	N/A	N/A	N/A	23,674	N/A
21 Wildlife Emphasis with Non-Scheduled Timber Harvest	N/A	N/A	N/A	N/A	22,076	N/A
22 Wild and Scenic River	N/A	10,256	10,256	10,256	10,256	10,256
Roads, Water, etc	26,833	26,833	26,833	26,833	26,833	26,833
TOTAL	1,459,422	1,459,422	1,459,422	1,459,422	1,459,422	1,459,422

4/ Lands assigned to Management Areas 1 through 4B, 14, 15, 18, 20, and scenic portions of 22 had the option in FORPLAN of being assigned to that management area or to minimum level management (Management Area 16) Lands assigned to all other management areas were fixed (does not apply to the No Change Alternative)

Alternatives Described

A brief description of each alternative listed in this Final EIS follows

a Alternative NC (No Change)

The "No Change" alternative has been developed in response to direction by the Chief of the Forest Service and Deputy Assistant Secretary Douglas MacCleery regarding appeal number 1588, brought by the Northwest Forest Resource Council on May 19, 1986 The appeal centered on direction by Regional Forester James F Torrence to "require inclusion of (Minimum Management Requirements) in the Current Direction Alternative for each Forest Plan " The substance of the appeal was that a "true No-Action Alternative representing current management plans" was not included in the Forest Plan Environmental Impact Statements The No Change Alternative is designed to represent the existing timber management plans and, consequently, does not comply with all provisions of the National Forest Management Act (NFMA) and regulations promulgated by the Secretary of Agriculture to implement NFMA The following provisions of NFMA or other laws or regulations are not partially or fully complied with in current management plans represented by the No Change Alternative

CFR 219.14 - Timber resource land suitability Requires identification of land not suited for timber production based on risk of irreversible resource damage, lack of assurance of reforestation within five years, or withdrawal by Act of Congress, Secretary of Agriculture, or Chief of the Forest Service

CFR 219 16 - Timber resource sale schedule Requires determination of the quantity of timber that may be sold during each decade Requires calculation of the long-term sustained yield capacity

CFR 219.27(c)(1) - Management Requirements, silvicultural practices Requires that no timber harvesting shall occur on lands classified as not suited for timber production pursuant to CFR 219 14, except for salvage sales, sales necessary to protect other multiple use values or activities that meet other objectives on such lands if the forest plan objectives establish that such actions are appropriate

The No Change Alternative could not be implemented or used in future management of the Forest under the Forest Plan without Congressional and/or Secretary of Agriculture action to change the law or regulations

Timber Management The timber management goal is to grow moderate size trees (19-inch diameter and larger) while emphasizing rapid fiber growth rates A full range of timber management intensities would be made available to 1,116,577 acres to meet this goal. 59 percent of this land would be managed for full yield and 41 percent for 50 to 90 percent of full yield First decade potential yield in Alternative NC would be 269 7 million board feet annually This is about 42 million board feet above 1980-89 average annual sell levels Potential yield is the sustainable output of wood fiber available after *the needs of other Forest uses have been deducted from the biological potential*

Range Management The range management goal is to provide sufficient forage to support 126,150 animal unit months annually Specific management direction regarding how to meet this goal is not available

Recreation· The recreation management goal is to emphasize dispersed, roaded recreation opportunities with sufficient recreation opportunities in both unroaded and developed settings *to meet expected demand Unroaded recreation opportunities outside* wilderness would be provided in five currently unroaded areas encompassing 54,167 acres Wilderness acres would remain at the level they are today, 81,320 acres These areas would be managed under provisions in the Wilderness Act of 1964 and subsequent legislation

Virtually all remaining Forest land is managed to provide opportunities for roaded recreation. Management activities are modified on 66,720 acres along visually sensitive travel routes, as described in the Timber Resource Management Plan

Riparian Area Management and Fisheries Habitat The riparian and fisheries management goal is to manage all riparian areas to meet State water quality standards, which will maintain viable populations of resident fish and maintain anadromous fish habitat at or above current capability

Wildlife Habitat The wildlife habitat management goal is to manage all wildlife emphasis areas to benefit associated wildlife species

Snag habitat would be retained to support 60 percent of the potential population of cavity-dwelling species in areas assigned to wildlife emphasis and 40 percent in timber and range emphasis areas Snag replacement trees were not a part of the design in the Timber Resource Management Plan, and hence would not be provided

Old-Growth Forest The old-growth management goal is to provide old-growth habitat for dependent species On those areas available for programmed timber harvest, 123,587 acres of potential old-growth habitat would be managed under a 260-year rotation using a three-tier system to maintain approximately one-third of this area in old growth An additional 64,027 acres of old growth would be provided in wilderness, roadless areas, and bald eagle winter roosts.

Management of Undeveloped Areas. The undeveloped area management goal is to maintain, in a roadless condition, key roadless areas identified during the unit planning process (McClellan Mountain, North Fork Malheur River, Malheur River, Glacier Mountain, and

Greenhorn Mountain) These areas would be managed using boundaries shown in unit plans. The remaining roadless areas would be assigned to other resource emphases

Unroaded recreation opportunities outside wilderness would be provided on 54,167 acres The Pine Creek Further Planning Area would be assigned to timber and range management emphasis, however, timber management would be deferred

Mitigation Measures: Alternative NC provides management direction for wildlife, roadless areas, and scenic travel corridors

Within the acreage available for timber production, old-growth habitat areas will be managed for dependent wildlife species In areas that have no programmed harvest, the dependent species would be present at or near their maximum population levels

To maintain viable populations of cavity-excavating species which in turn provide habitat for other species, snags would be managed to provide habitat for at least 40 percent of the potential population in timber and range emphasis areas, and at least 60 percent in wildlife emphasis areas In addition, dead trees would be left to fall across streams to produce fish-rearing pools

Alternative NC includes 54,167 acres of roadless areas managed to provide a scenic or semiprimitive, nonmotorized recreational opportunity Timber harvesting, road construction, and motor vehicles of any kind would be prohibited in these areas These areas, along with the 81,320 acres of wilderness, would provide places for the Forest visitor to get away from the sounds and sights of human activity

Logging activities, road construction, and grazing would be modified on 66,720 acres of land that occur along visually sensitive travel routes These foreground viewing areas would be managed to provide travelers with "natural-appearing" to "slightly altered" scenery

b. Alternative A (No Action)

Alternative A was developed to continue implementation of the management direction provided by the existing land management plans (John Day, Silvies-Malheur, and South Fork Unit Plans) and the Timber Resource Management Plan updated to meet current laws and regulations This includes compliance with Management Requirements (MRs) and National Forest Management Act provisions and regulations This alternative provides an estimate of the activities and outputs likely to occur if management were to continue under existing direction The goal of these plans is to intensively manage the timber resource coordinated with nonintensive management of recreation and wildlife

Alternative A serves as the No Action Alternative required by the National Environmental Policy Act of 1969

Timber Management The timber management goal of this alternative is to grow moderate size trees (17-inch diameter and larger) while emphasizing rapid fiber growth rates Ponderosa pine would be emphasized on approximately 311,111 acres, and mixed conifer species emphasized on approximately 531,177 acres A full range of timber management intensities would be made available to 967,327 acres Of these available acres, 898,424 acres are deemed suitable for timber harvest Of the suitable land, 86 percent would be managed for full yield, 4 percent for 50 to 90 percent of full yield, and 10 percent for less than 50 percent of full yield First decade annual timber harvest in Alternative A would be 232.7 million board feet annually This is about 4 million board feet above 1980-89 average annual sell levels

Range Management The range management goal is to sustain permitted range use levels Full utilization of forage by livestock would be encouraged Seeding would be done on some forested land after timber harvest to increase existing livestock forage

production. Livestock and big game may consume 50 percent of the annual growth of forage on uplands in this alternative

Recreation: The recreation management goal is to emphasize dispersed, roaded recreation opportunities with sufficient recreation opportunities in both unroaded and developed settings to meet expected demand

Unroaded recreation opportunities outside wilderness would be provided in 6 currently unroaded areas encompassing 59,179 acres (including 3,066 acres of the wild portion of the Malheur River). Wilderness acres would remain at the level they are today, 81,320 acres Monument Rock Wilderness would be managed for semiprimitive wilderness recreation opportunities Strawberry Mountain Wilderness would have 8,244 acres in the lakes basin managed for semiprimitive wilderness opportunities, 53,586 acres managed as primitive trailed wilderness, and 6,870 acres managed as primitive trailless

Virtually all the remainder of the Forest would be managed to provide opportunities for roaded recreation Of the 25 existing campgrounds, 11 would be managed as developed sites The remaining campgrounds would be managed for dispersed use (sanitation facilities only would be provided) Management activities would be modified on 249,591 acres along visually sensitive travel routes

Riparian Area Management and Fisheries Habitat The riparian area and fisheries management goal is to manage all riparian areas to meet Oregon State water quality standards and maintain or improve anadromous fish habitat Improvement in resident trout habitat would generally be achieved through a gradual improvement in riparian condition rather than by habitat improvement work occurring in the stream itself Structural habitat improvement work would generally be for mitigation only This would be done on approximately 3 miles of stream per year

Livestock and big game would be allowed to consume 70 percent of the annual growth of grass forage and 67 percent of the annual shrub growth in riparian areas In addition to approximately 3 miles of lower intensity instream structural work done as mitigation, more intensive instream habitat improvements would be applied at a rate of about 2 miles per year in anadromous streams

Wildlife Habitat The big-game habitat management goal is to manage elk summer range and wildlife emphasis areas via a Habitat Effectiveness Index (HEI) model developed for the Blue Mountains, applied on a subwatershed basis (3,000-15,000 acres) A specific goal is to manage all elk winter range for an optimal mix and distribution of forage and cover in unit plan wildlife emphasis areas Satisfactory big-game cover would be retained at a minimum of approximately 10 percent in general forest allocations (where possible)

Snag habitat would be retained to support 60 percent of the potential population of cavity-dwelling species in areas assigned to wildlife emphasis and 40 percent in timber and range emphasis areas Replacement snag habitat would be provided

Habitat improvement to mitigate timber harvest, road construction, or livestock grazing impacts to the wildlife resource would occur It would include burning, seeding and planting to improve forage conditions Also included would be snag creation, retention of dead and down woody material, and rehabilitating decadent aspen stands Habitat enhancement would occur at a low level

Old-Growth Forest The old-growth management goal is to provide sufficient habitat to maintain dependent species at or above their minimum viable population levels Total old-growth habitat provided would be 104,661 acres, with 40,800 acres on timber producing lands outside wilderness, roadless areas, and bald eagle winter roosts

Management of Undeveloped Areas: The undeveloped area management goal is to maintain, in a roadless condition, key roadless areas identified during the unit planning process (McClellan Mountain, North Fork Malheur River, Malheur River, Glacier Mountain, Greenhorn Mountain, and Pine Creek) These areas would be managed using boundaries shown in unit plans The remaining roadless areas would be assigned to other resource emphases

Unroaded recreation opportunities outside wilderness would be provided on 59,179 acres The Pine Creek Further Planning Area would not be recommended for wilderness designation, but would be retained as a roadless area

Research Natural Areas The Research Natural Area (RNA) management goal is to preserve the established areas as examples of naturally occurring ecosystems in unmodified conditions for research and education Canyon Creek is the only existing research natural area. Three candidate RNAs would be identified for the Forest, one is located in the Strawberry Mountain Wilderness (Baldy Mountain), and the others are McClellan Mountain and Antelope Valley

Mitigation Measures Alternative A provides management direction for wildlife, roadless areas, and scenic travel corridors

Within the acreage available for timber production, enough old-growth habitat areas would be dedicated to maintain the dependent wildlife species at or above their minimum viable level In areas that have no programmed harvest, the dependent species would be present at or near their maximum population levels

To maintain viable populations of cavity-excavating species, which in turn provide habitat for other species, snags would be managed to provide habitat for at least 40 percent of the potential population in timber and range emphasis areas, and at least 60 percent in wildlife emphasis areas In addition, dead trees along streamcourses would be left to fall across streams to produce fish-rearing pools

Alternative A includes 59,179 acres of roadless areas managed to provide a semiprimitive, nonmotorized recreational opportunity Timber harvesting, road construction, and motor vehicles of any kind would be prohibited in these areas These areas, along with the 81,320 acres of wilderness, would provide places for the Forest visitor to get away from the sounds and sights of human activity

Logging activities, road construction, and grazing would be modified on 249,591 acres of land that occur along visually sensitive travel routes These viewsheds would be managed to provide travelers with "natural-appearing" to "slightly altered" scenery

c Alternative B-Mod (DEIS Alternative B as modified to incorporate Preferred-Plus Alternative)

Alternative B-Modified emphasizes the production of resources such as timber, developed recreation, minerals, and most other resources which have the potential to return revenue to the U S Treasury and local counties Management of other resources is at economically and environmentally feasible levels that are consistent with the overall emphasis on market-oriented outputs

Alternative B-Modified also attempts to meet the 1980 Resources Planning Act program output targets assigned to the Forest for timber production through the Pacific Northwest Regional Guide

Timber Management The timber management goal of this alternative is to grow moderate size trees (17-inch diameter and larger) while meeting Resources Planning Act program targets for the first 50 years and emphasizing rapid fiber growth by utilizing later successional timber species Ponderosa pine would be emphasized on approximately 316,152 acres and mixed conifer species on approximately 580,632 acres. A full range

of timber management intensities would be made available to 987,088 acres to meet this goal. Of these available acres 956,783 acres are deemed suitable for timber harvest Of the suitable land, 91 percent would be managed for full yield, 4 percent for 50 to 90 percent of full yield, and 5 percent for less than 50 percent of full yield First decade annual timber harvest in Alternative B-Modified would be 265.9 million board feet annually This is about 38 million board feet above 1980-89 average annual sell levels

Range Management The range management goal is to manage and utilize forage at historic use levels Utilization of forage by livestock would be encouraged Seeding would be done annually on both forested and nonforested rangeland to optimize forage for cattle Livestock and big game may consume 50 percent of the annual growth of forage on uplands in this alternative

Recreation. The recreation management goal is to emphasize recreation in a roaded modified setting

Unroaded recreation opportunities outside wilderness would be provided in the 13,322 acres of the Vinegar Hill-Indian Rock Scenic Area Wilderness acres would remain at the level they are today, 81,320 acres Monument Rock Wilderness would be managed for semiprimitive wilderness recreation opportunities Strawberry Mountain Wilderness would have 61,830 acres managed for semiprimitive wilderness opportunities and 6,870 acres managed as primitive trailless Unroaded recreation opportunities would also be available in 3066 acres of the Malheur River designated as wild under the Oregon Omnibus Wild and Scenic Rivers bill

Virtually all the remainder of the Forest would be managed to provide opportunities for roaded recreation Of the 25 existing campgrounds, 11 would be managed as developed sites The remaining campgrounds would be managed for dispersed use Management activities would be modified on 199,913 acres along visually sensitive travel routes

Riparian Area Management and Fisheries Habitat The riparian area and fisheries management goal is to manage all riparian areas to meet Oregon State water quality standards and maintain or improve anadromous fish habitat Improvement in resident trout habitat would generally be achieved through improvement in riparian condition rather than by habitat improvement work occurring in the stream itself Structural habitat improvement work on about 3 miles of stream per year would generally be for mitigation only

In riparian areas, livestock and big game may consume 45 percent of the annual growth of grass forage and 40 percent of the annual shrub growth in this alternative Livestock use would be limited on streamside forage along about 70 miles of anadromous streams with riparian areas in less than desired condition for a period of time to accelerate riparian improvement in these areas In addition to approximately 3 miles of lower intensity instream structural work as mitigation, more intensive instream habitat improvements in anadromous streams would be applied at a rate of about 3 miles per year

Wildlife Habitat The big-game habitat management goal is to manage elk summer and winter range via a Habitat Effectiveness Index (HEI) model developed for the Blue Mountains, applied on a subwatershed basis (3,000-15,000 acres) Winter range would be managed to provide a mix and distribution of forage and cover Three of the elk winter ranges would receive intensive timber management Satisfactory big-game cover would be retained at a minimum of 5 percent in both summer and winter ranges across the forest.

Snag habitat would be retained to support 40 percent of the potential population of cavity-dwelling species Forest-wide In riparian areas and areas immediately adjacent to riparian areas snag habitat would be retained to support 80 percent and 50 percent of the potential population of cavity-dwelling species, respectively Snag replacement habitat would also be provided at the same levels

Habitat improvement to mitigate timber harvest, road construction, or livestock grazing impacts to the wildlife resource would occur It would include burning, seeding and planting to improve forage It will also include snag creation, leaving of dead and down woody material, and rehabilitating decadent aspen stands Habitat enhancement would occur at a low level

Old-Growth Forest The old-growth management goal is to provide sufficient habitat to maintain dependent species at or above their minimum viable population levels Total old-growth habitat provided after decade 5 would be limited to 90,509 acres, with 43,600 acres on timber-producing lands outside wilderness, roadless areas, and bald eagle winter roosts

Management of Undeveloped Areas· The undeveloped area management goal is to maintain, in a roadless condition, the Vinegar Hill-Indian Rock Scenic Area and wild portion of Malheur River The remaining roadless areas would be assigned to other resource emphases

Unroaded recreation opportunities outside wilderness would be provided on 13,322 acres The Pine Creek Further Planning Area would not be recommended for wilderness and is assigned to other resource emphases

Research Natural Areas The Research Natural Area (RNA) management goal is to preserve the established areas as examples of naturally occurring ecosystems in unmodified conditions for research and education Canyon Creek is the only existing research natural area Three candidate RNAs would be identified for the Forest, one is located in the Strawberry Mountain Wilderness (Baldy Mountain), and the others are McClellan Mountain and Antelope Valley

Mitigation Measures Alternative B-Modified provides management direction for wildlife, roadless areas, riparian areas, and scenic travel corridors

Within the acreage available for timber production, enough old-growth habitat areas would be dedicated to maintain the dependent wildlife species at or above their minimum viable level In areas that have no programmed harvest, the dependent species would be present at or near their maximum population levels

To maintain viable populations of cavity-excavating species, which in turn provide habitat for other species, snags· would be managed to provide habitat for 80 percent of the potential population in riparian areas and 50 percent of potential populations immediately adjacent to riparian areas, with a Forest-wide objective of 40 percent In addition, dead trees along streamcourses would be left to fall across streams to produce fish-rearing pools

Alternative B-Modified includes the 13,322 acre Vinegar Hill-Indian Rock Scenic Area (part of the Greenhorn Mountain roadless area) that has been designated as semiprimitive Motorized Timber harvesting, road construction, and motor vehicles (other than snowmobiles) would be prohibited in this area This area, along with the 81,320 acres of wilderness, would provides a place for the Forest visitor to get away from the sounds and sights of human activity

Logging activities, road construction, and grazing are modified on another 199,913 acres of land that occurs along visually sensitive travel routes These viewsheds will be managed to provide travelers with "natural-appearing" to "slightly altered" scenery

Alternative B-Modified mitigates the impacts of livestock grazing on riparian areas along anadromous streams that are in unsatisfactory condition Livestock grazing will be reduced or eliminated for a period of time to allow the riparian vegetation and streambanks to improve to an acceptable level Once recovered, the riparian areas will be managed to maintain an acceptable condition

d Alternative C-Mod (DEIS Alternative C modified to incorporate Grant County Conservationist and Citizens Multiple Use Alternatives)

Alternative C-Modified assigns all current roadless areas outside existing wilderness to a management prescription which will maintain their roadless status. It also emphasizes the protection of natural scenery, fish and wildlife habitat, and other amenity values Management of other resources would be at economically and environmentally feasible levels consistent with the overall emphasis on amenity values

Timber Management The timber management goal is to grow large-size ponderosa pine trees (26-inch diameter and larger), utilizing both even-aged and uneven-aged management systems Timber management would favor perpetuation of ponderosa pine across the Forest where biologically possible. Ponderosa pine would be emphasized on approximately 481,783 acres, and mixed conifer species emphasized on approximately 245,470 acres. A range of timber management intensities emphasizing production of large-size ponderosa pine trees would be made available to 831,340 acres to meet this goal. Of these available acres, 770,387 acres are deemed suitable for timber harvest. Of the suitable land, 35 percent would be managed for full yield, 54 percent for 50 to 90 percent of full yield, and 11 percent for less than 50 percent of full yield. First decade annual timber harvest in Alternative C-Modified would be 154.0 million board feet annually This is about 74 million board feet below 1980-89 average annual sell levels.

Range Management The range management goal is to allow range use where it does not conflict with the amenity orientation of this alternative Grasses, forbs, and other forage would be managed to provide forage for both livestock and big game Livestock and big game would be allowed to consume 50 percent of the annual growth of forage on uplands.

Recreation The recreation management goal is to emphasize unroaded recreation opportunities

Unroaded recreation opportunities outside wilderness would be provided in all currently unroaded areas encompassing 175,416 acres (including 3,066 acres of the wild portion of the Malheur River) Wilderness acreage would increase to 86,740 acres Monument Rock Wilderness would be managed for semiprimitive wilderness recreation opportunities Strawberry Mountain Wilderness would have 61,830 acres managed as primitive trailed wilderness and 6,870 acres managed as primitive trailless Pine Creek roadless area would be recommended for wilderness and managed for semiprimitive wilderness recreation opportunities In addition, roughly 17,100 acres would be added to the RARE II areas to make more manageable boundaries

Virtually all the remainder of the Forest would be managed to provide opportunities for roaded recreation Of the 25 existing campgrounds, 11 would be managed as developed sites The remaining campgrounds would be managed for dispersed use Management activities would be modified on 307,819 acres along visually sensitive travel routes

Riparian Area Management and Fisheries Habitat The riparian area and fisheries management goal is to manage all riparian areas to meet Oregon State water quality standards and improve anadromous and resident fish habitat No timber harvest would be scheduled for Class I, II and III stream riparian zones. Improvement in resident and anadromous fish habitat would be achieved through improved livestock management adjacent to streams and a moderate level of instream improvements

No scheduled timber harvest will occur in riparian areas. Livestock and big game may consume 45 percent of the annual growth of grass forage and 40 percent of the annual shrub growth in this alternative Livestock use would limited for a period of time on pastures adjacent to riparian areas in less than desired condition to allow improvement of these areas Instream improvements would be applied at a rate of about 5 miles per year

Wildlife Habitat The big-game habitat management goal is to manage elk summer and winter range (maintenance and enhancement) via a Habitat Effectiveness Index (HEI) model developed for the Blue Mountains, applied on a subwatershed basis (3,000-15,000 acres) All elk winter range would be managed to enhance forage production and provide an optimum mix and distribution of forage and cover The carrying capacity of five of the elk winter ranges would be enhanced Livestock use would be limited to 25 percent of the forage available in these 5 winter range areas Satisfactory big-game cover would be retained at a minimum of 15 percent in both summer and winter ranges (where possible)

Snag habitat would be retained to support 60 percent of the potential population of cavity-dwelling species Forest-wide In riparian areas and areas immediately adjacent to riparian areas, snag habitat would be retained to support 80 percent and 50 percent of the potential population of cavity-dwelling species, respectively Snag replacement habitat would also be provided at these levels

Habitat improvement to mitigate timber harvest, road construction, or livestock grazing impacts to the wildlife resource would occur Habitat enhancement would occur at moderate-to-high levels It would include burning, seeding and planting to improve forage It will also include snag creation, retention of dead and down woody material, and rehabilitating decadent aspen stands

This alternative would exceed Oregon State Fish and Wildlife management objectives

Old-Growth Forest The old-growth management goal is to provide sufficient habitat to maintain dependent species at 50 percent or more above their minimum viable population levels After decade 5, total old-growth habitat provided would be limited to 178,761 acres, with 47,930 acres on timber-producing lands outside wilderness, bald eagle winter roosts, and roadless areas

Management of Undeveloped Areas The undeveloped area management goal is to maintain all existing roadless areas in a roadless condition

Unroaded recreation opportunities outside wilderness would be maintained at approximately 192,500 acres Boundaries would be those used in the RARE II process, with modifications in several areas The Pine Creek Further Planning Area would be recommended for wilderness designation

Research Natural Areas The Research Natural Area (RNA) management goal is to preserve the established areas as examples of naturally occurring ecosystems in unmodified conditions for research and education Canyon Creek is the only existing research natural area Three candidate RNAs would be identified for the Forest, one is located in the Strawberry Mountain Wilderness (Baldy Mountain), and the others are McClellan Mountain and Antelope Valley

Mitigation Measures: Alternative C-Modified provides management direction for wildlife, roadless areas, riparian area improvement, insect-resistant stands, and scenic travel corridors

Within the acreage available for timber production, old-growth habitat areas would be dedicated to maintain the dependent wildlife species at 50 percent or more above their minimum viable level In areas that have no programmed harvest, the dependent species would be present at or near their maximum population levels

To maintain viable populations of cavity-excavating species, which in turn provide habitat for other species, snags would be managed to provide habitat for 80 percent of the potential population in riparian areas and 50 percent of potential populations immediately adjacent to riparian areas for a Forest-wide objective of 60 percent Dead trees which fall across streams would also be left to produce fish-rearing pools

The risk of a western spruce budworm epidemic in the mixed conifer stands is mitigated by silvicultural prescription These stands would receive a regeneration cut and would be planted with ponderosa pine

Livestock grazing would be mitigated on five of the inventoried elk winter ranges with an enhancement strategy. Of the available grass and grass-like forage, 75 percent would be allocated to big game. Other management activities which would enhance elk winter range, such as burning, seeding, or shrub restoration, would be implemented to maintain quality forage.

Effects of timber management activities such as logging and road construction would be mitigated in Alternative C-Modified with roughly 192,500 acres of roadless areas There are two kinds of roadless areas planned There would be about 119,479 acres of roadless areas that will provide semiprimitive, nonmotorized recreation Timber harvesting, road construction, and motorized vehicles of any kind would be prohibited in these areas These areas, along with 86,740 acres of wilderness, would provide for the Forest visitor who wants to get away from the sounds and sights of human presence There would also be 73,037 acres which would provide semiprimitive motorized recreation Timber harvesting and road construction would be prohibited in these areas, while motorized vehicles would be permitted and trails can be constructed to provide for Forest visitors who enjoy motorized recreation in a semiprimitive setting

Logging activities, road construction, and grazing would be modified on 307,819 acres of land that occur along visually sensitive travel routes These visual zones would be managed to provide travelers with "natural-appearing" to "slightly altered" scenery

Alternative C-Modified mitigates the impacts of livestock grazing on riparian areas in unsatisfactory condition. Livestock grazing would be reduced for a period of time to allow riparian vegetation and streambanks to improve to an acceptable level Once recovered, the riparian areas would be managed to maintain an acceptable condition

e Alternative F (Preferred Alternative in DEIS)

Alternative F emphasizes market-oriented outputs while providing for a moderate level of amenity features in land allocations To balance the economic effects of amenity features outside of unroaded areas, commodity production is featured on a majority of the currently unroaded areas tentatively suited for timber production

Timber Management The timber management goal is to grow moderate-size trees (17-inch diameter and larger) while emphasizing fiber production on a majority of the productive true fir sites Ponderosa pine would be emphasized on approximately 311,202 acres, and mixed conifer species emphasized on about 552,790 acres A full range of timber management intensities would be made available to 951,028 acres to meet this goal Of these available acres, 919,748 acres are deemed suitable for timber harvest. Of the suitable land, 88 percent would be managed for full yield, 4 percent for 50 to 90 percent of full yield, and 8 percent for less than 50 percent of full yield First decade annual timber harvest in Alternative F would be 246 6 million board feet annually This is about 18 million board feet above 1980-89 average annual sell levels

Range Management The range management goal is to maintain permitted range use levels with some reduction to improve riparian areas in unsatisfactory condition. Full utilization of forage will be encouraged Livestock and big game would be allowed to consume 50 percent of the annual growth of forage on uplands

Recreation The recreation management goal is to emphasize dispersed, roaded recreation opportunities with a moderate level of unroaded and developed recreation opportunities.

Unroaded recreation opportunities outside wilderness would be provided in 7 currently unroaded areas encompassing 66,962 acres (including 3,066 acres of the wild portion of the Malheur River) Wilderness acres would remain at the level they are today, 81,320 acres Monument Rock Wilderness would be managed for semiprimitive wilderness recreation opportunities Strawberry Mountain Wilderness would have 8,244 acres in the lakes basin managed for semiprimitive wilderness opportunities, 53,586 acres managed as primitive trailed wilderness, and 6,870 acres managed as primitive trailless

Virtually all the remainder of the Forest would be managed to provide opportunities for roaded recreation Of the 25 existing campgrounds, 11 would be managed as developed sites The remaining campgrounds would be managed for dispersed use Management activities would be modified on 204,215 acres along visually sensitive travel routes

Riparian Area Management and Fisheries Habitat. The riparian area and fisheries management goal is to manage all riparian areas to meet Oregon State water quality standards and maintain or improve anadromous fish habitat Improvement in resident trout habitat would generally be achieved through improvement in riparian condition rather than by habitat improvement work occurring in the stream itself Structural habitat improvement work on about 3 miles of stream per year would generally be for mitigation only

In riparian areas in good condition, livestock and big game would be targeted to consume 45 percent of the annual growth of grass forage and 40 percent of annual shrub growth In riparian areas in less than desired condition (approximately 60,000 acres of land containing approximately 2,000 acres of anadromous riparian areas), livestock would be targeted to consume 0-40 percent of the annual growth of grass forage. In addition to approximately 3 miles of lower intensity instream structural work as mitigation, more intensive instream habitat improvements would be applied at a rate of about 2 miles per year in anadromous streams

Wildlife Habitat The big-game habitat management goal is to manage elk summer and winter range areas via a Habitat Effectiveness Index (HEI) model developed for the Blue Mountains, applied on a subwatershed basis (3,000-15,000 acres) Elk winter range would be managed to provide an optimum mix and distribution of forage and cover Satisfactory big-game cover would be retained at a minimum of 5 percent for both summer and winter ranges across the Forest

Snag habitat would be retained to support an average of at least 40 percent of the potential population of cavity-dwelling species Forest-wide In riparian areas, and areas immediately adjacent to riparian areas snag habitat would be retained to support 80 percent and 50 percent of the potential population of cavity-dwelling species, respectively Commercial forestlands outside riparian would be managed at the 40 percent level Snag replacement trees would be provided to maintain these levels of habitat through time

Habitat improvement to mitigate timber harvest, road construction, or livestock grazing impacts to the wildlife resource would occur Habitat enhancement would occur at a low-to-moderate level It would include burning, seeding and planting to improve forage It will also include snag creation, leaving dead and down woody material, and rehabilitating decadent aspen stands

Old-Growth Forest The old-growth management goal is to provide sufficient habitat to maintain dependent species at 30 percent or more above their minimum viable population levels Total old-growth habitat remaining after decade 5 would be 121,042 acres, with 50,090 acres on timber-producing lands outside wilderness, bald eagle winter roosts, and roadless areas

Management of Undeveloped Areas The undeveloped area management goal is to maintain in a roadless condition Aldrich, McClellan Mountain, Malheur River, North Fork Malheur River, Glacier Mountain, Myrtle-Silvies, and Greenhorn Mountain areas utiliz-

ing manageable boundaries The remaining roadless areas would be assigned to other resource emphases

Unroaded recreation opportunities outside wilderness would be provided on 66,962 acres. The Pine Creek Further Planning Area would not be recommended for wilderness designation but is assigned to other resource emphases.

Research Natural Areas. The Research Natural Area (RNA) management goal is to preserve the established areas as examples of naturally occurring ecosystems in unmodified conditions for research and education Canyon Creek is the only existing research natural area. Three candidate RNAs would be identified for the Forest one is located in the Strawberry Mountain Wilderness (Baldy Mountain), and the others are McClellan Mountain and Antelope Valley

Mitigation Measures: Alternative F provides management directions for wildlife, roadless areas, riparian area improvement, and scenic travel corridors

Within the acreage available for timber production, sufficient old-growth habitat would be dedicated to maintain the dependent wildlife species at 30 percent or more above their minimum viable level. In areas that have no programmed harvest, the dependent species would be present at or near their maximum population levels

To maintain viable populations of cavity-excavating species, which in turn provide habitat for other species, snags would be managed to provide habitat for at least 80 percent of the potential population in riparian areas and 50 percent of potential populations immediately adjacent to riparian areas for a Forest-wide objective of around 40 percent Dead trees along streamcourses which fall across streams would be left to produce fish-rearing pools.

Effects of timber management activities, such as logging and road construction, are mitigated in Alternative F with 66,962 acres of roadless areas Two kinds of roadless areas are planned. There would be 50,949 acres of roadless areas that would provide semiprimitive, nonmotorized recreation Timber harvesting, road construction, and motorized vehicles of any kind would be prohibited in these areas These areas, along with 81,320 acres of wilderness, would provide for the Forest visitor who wants to get away from the sounds and sights of human presence There are 16,013 acres which would provide semiprimitive, motorized recreation. Timber harvesting and road construction would be prohibited in these areas while allowing for motorized vehicles and trail construction to provide for Forest visitors that enjoy motorized recreation in a semiprimitive setting

Logging activities, road construction, and grazing would be modified on 204,215 acres of land that occur along visually sensitive travel routes These viewsheds would be managed to provide travelers with "natural-appearing" to slightly altered" scenery

f. Alternative I (Preferred Alternative)

Alternative I features a range of land uses between amenity values and commodity production emphasis This alternative reduces harvest in riparian zones, features uneven-aged management on roughly 30 percent of the suitable timber lands, and intensifies regeneration harvests where severe insect and disease agents have recently occurred Approximately one-half of unroaded areas remain unroaded

Timber Management. The timber management goal is to grow a range of moderate-size trees (18-inch diameter and larger) while emphasizing the conversion of mixed conifer stands to ponderosa pine in order to produce harvest volumes of 60 to 70 percent ponderosa pine in future decades Ponderosa pine would be emphasized on approximately 454,388 acres, and mixed conifer species emphasized on approximately 330,829 acres A full range of timber management intensities would be made available to 905,151 acres to meet this goal Of these available acres 835,970 acres are deemed suitable for timber

production Of the suitable land, 56 percent would be managed for full yield, 39 percent for 50 to 90 percent of full yield, and 5 percent for less than 50 percent of full yield Heavily defoliated and slow-growing, diseased mixed conifer stands would be scheduled for regeneration harvest in the first decade In Alternative I, first decade timber sale program quantity and annual timber harvest would be 211 million board feet annually This is about 17 million board feet below the 1980-89 average annual sell levels.

Range Management The range management goal is to maintain permitted range-use levels with some reduction occurring to improve anadromous riparian areas in unsatisfactory condition Full utilization of forage would be encouraged Livestock and big game would be allowed to consume 50 percent of the annual growth of forage on uplands

Recreation The recreation management goal is to emphasize dispersed, roaded recreation opportunities with moderately high levels of unroaded and developed recreation opportunities.

Unroaded recreation opportunities outside wilderness would be provided in 8 currently unroaded areas encompassing 79,854 acres (including 3,066 acres of the wild portion of the Malheur River) Wilderness acres would remain at the level they are today, 81,320 acres Monument Rock Wilderness would be managed for semiprimitive wilderness recreation opportunities. Strawberry Mountain Wilderness would have 8,244 acres in the lakes basin managed for semiprimitive wilderness opportunities, 53,586 acres managed as primitive trailed wilderness, and 6,870 acres managed as primitive trailless

Virtually all the remainder of the Forest would be managed to provide opportunities for roaded recreation Of the 25 existing campgrounds, 20 would be managed as developed sites The remaining campgrounds would be managed for dispersed use Management activities would be modified on 225,953 acres along visually sensitive travel routes

Riparian Area Management and Fisheries Habitat The riparian and fisheries management goal is to manage all riparian areas to meet Oregon State water quality standards and maintain or improve fish habitat Habitat improvement will be achieved with a combination of riparian area improvement and structural habitat improvement Improvement in the abundance and diversity of riparian vegetation, with the associated geomorphic recovery of the stream channel, will account for the larger part of the expected increase in fish habitat capability over time Structural work will be done to accelerate this riparian improvement as well as to provide direct habitat improvement Habitat improvement work will be applied at a rate of about four miles per year Forest-wide Priority for appropriated funds for this work will go to anadromous streams Fish habitat improvement will also be funded with K-V funds generated by timber sale receipts

In riparian areas in a condition to meet the needs of riparian-dependent resources, the forage utilization objective will generally be no more than 45 percent for grasses and 40 percent for shrubs (for livestock and big game combined) Utilization standards may vary based on site-specific standards in allotment management plans In riparian areas not in a condition to meet the needs of riparian-dependent resources, such as areas with unstable banks, lowered water table, or a lack of stream surface shade, forage utilization will generally be restricted to 0-35 percent of the annual growth of grass forage and 0-30 percent of annual growth on shrubs Again, standards may vary depending on the specific interdisciplinary objectives of the allotment management plan

Wildlife Habitat The big-game habitat management goal is to manage elk summer and winter range, and wildlife emphasis areas, via a Habitat Effectiveness Index (HEI) model developed for the Blue Mountains, applied on a subwatershed basis (3,000-15,000 acres). Satisfactory big-game cover would be retained at a minimum of 10 percent in winter ranges (where possible), 10 to 15 percent in summer ranges, and at 15% in Wildlife Emphasis areas

Snag habitat would be retained to support 40 percent of the potential of cavity dwelling species Forest-wide. In riparian areas, snag habitat would be retained to provide 60 percent of potential, 60-100 percent in wildlife emphasis areas, and at or near natural levels in wilderness areas, research natural areas, the Scenic Area, bald eagle winter roosts, and dedicated old-growth areas. Snag replacement habitat trees would also be provided to maintain these levels into the future

Habitat improvement to mitigate timber harvest, road construction, or livestock grazing impacts to the wildlife resource would occur Habitat enhancement would occur at a moderate level It would include burning, seeding and planting to improve forage It will also include snag creation, retention of dead and down woody material, and rehabilitating decadent aspen stands

Old-Growth Forest: The old-growth management goal is to provide sufficient habitat to maintain dependent species at 30 percent or more above their minimum viable population levels Total old-growth habitat provided would be on approximately 121,042 acres, with 47,690 acres on timber-producing lands outside wilderness, bald eagle winter roosts, and roadless areas In addition, there would be approximately 25,000 acres of old-growth replacement stands that would help ensure old-growth conditions well into the future

Management of Undeveloped Areas The undeveloped area management goal is to maintain in a roadless condition Aldrich, McClellan Mountain, North Fork Malheur River (area outside of the Wild and Scenic River corridor which will be renamed Bear Creek), Malheur River, Glacier Mountain, Myrtle-Silvies, Greenhorn Mountain and Shaketable areas utilizing manageable boundaries The remaining roadless areas would be assigned to other resource emphases.

Unroaded recreation opportunities outside wilderness would be provided on 79,854 acres. The Pine Creek Further Planning Area would not be recommended for wilderness designation but would be assigned to other resource emphases

Research Natural Areas: The Research Natural Area (RNA) management goal is to preserve the established areas as examples of naturally occurring ecosystems in unmodified conditions for research and education Canyon Creek is the only existing research natural area Four candidate Research Natural Areas would be identified for the Forest, one is located in the Strawberry Mountain Wilderness (Baldy Mountain), and the others are Shaketable Mountain, Dixie Butte, and Dugout Creek

Mitigation Measures: Alternative I provides management direction for wildlife, roadless areas, riparian area improvement, insect-resistant stands, and scenic travel corridors

Within the acreage available for timber production, old-growth habitat areas would be dedicated to maintain the dependent wildlife species at 30 percent or more above their minimum viable level In areas that have no programmed harvest, the dependent species would be present at or near their maximum population levels

To maintain viable populations of cavity-excavating species, which in turn provide habitat for other species, snags would be managed to provide habitat for at least 60 percent of the potential population in riparian areas and 40 percent of potential populations in other management areas for a Forest-wide objective of slightly greater than 40 percent Snag replacement trees would be provided across the managed forest and dead trees along streamcourses which fall across streams would generally be left to produce fish-rearing pools

Effects of timber management activities such as logging and road construction are mitigated in Alternative I with 79,854 acres of roadless areas Two kinds of roadless areas are planned. There would be 62,210 acres of roadless areas that would provide semiprimitive, nonmotorized recreation. Timber harvesting, road construction, and motorized vehicles

of any kind would be prohibited in these areas These areas, along with 81,320 acres of wilderness, would provide for the Forest visitor who wants to get away from the sounds and sights of human activity There are 14,578 acres which would provide semiprimitive, motorized recreation Timber harvesting and road construction would be prohibited in these areas while allowing for motorized vehicles and trail construction to provide for Forest visitors who enjoy motorized recreation in a semiprimitive setting.

Logging activities, road construction, and grazing would be modified on 225,953 acres of land occurring along visually sensitive travel routes These viewsheds would be managed to provide travelers with "natural-appearing " to slightly altered" scenery

Alternatives Compared

In general, Alternative B-Modified emphasizes intensive commodity production, while Alternative C-Modified emphasizes a more natural system The remaining alternatives provide various mixes in emphases between these alternatives The management area mix of each alternative is shown in Table S-2

Indicators of response for each alternative are summarized in Table S-3. From these tables, alternatives can be compared according to the listed resource concerns The abbreviations used in the table follow

PNV = Present Net Value

MR = Management Requirement

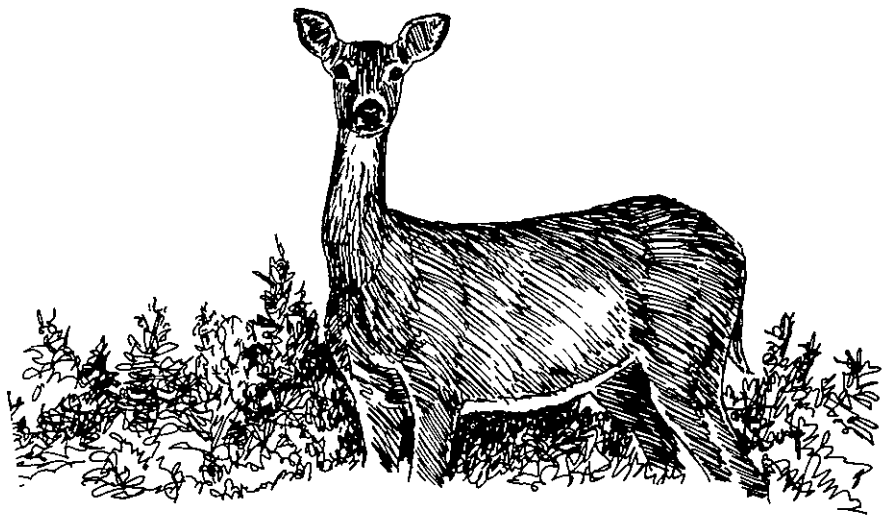


TABLE S-3 Indicators of Response of Alternatives to Planning Issues and National Concerns (Average Annual Outputs)

Indicators of Response	Alternatives (In order of decreasing present net value) Max PNV[1/] (W/MR)	No Change NC	B-Mod	F	A	Preferred I	C-Mod
Economics							
Present Net Value (Millions of Dollars)	472 6	381 7	350 5	328 3	300 2	256 6	126 4
Economic Stability[2/]							
Payments to Counties (Millions of Dollars)							
Decade 1	7 0	6 0	7 4	6 8	6 3	5 9	4 4
Decade 5	N/A	N/A	8 6	8 6	8 2	7 0	3 9
First Decade Change in Employment (Jobs)	+554	N/A	+235	+ 96	0	-161	-573
First Decade Change in Income (Million Dollars)	+14 0	N/A	+ 7 8	+ 3 2	0	-5 3	-18 9
Timber Management							
First Decade Annual Allowable Sale Quantity							
Millions of Cubic Feet	47 7	N/A	44 0	40 9	38 6	34 8	25 5
Millions of Board Feet	273 0	N/A	252 0	233 7	220 6	200 0	146 0
Fifth Decade Annual Allowable Sale Quantity							
Millions of Cubic Feet	47 7	N/A	44 0	40 9	39 0	34 8	25 5
Suitable Timber Lands (Thousand Acres)	996	1,117	957	920	898	836	770
Allowable Sale Quantity Offered as Ponderosa Pine (Millions of Board Feet)							
First Decade	*149 6*	*N/A*	*121 0*	*112 0*	*106 0*	*92 0*	*70 0*
(Millions of cubic feet)							
First Decade	26 2	N/A	21 2	19 6	18 5	16 0	12 2
Fifth Decade	N/A	N/A	18 0	18 8	17 9	15 2	9 4
Suitable Timber Lands under Ponderosa Pine Management (Thousand Acres)	N/A	N/A	316	311	311	454	482
Harvest Methods, Clearcut (1,000 Acres)							
1st Decade	3 0	N/A	4 3	2 8	2 7	3 3	2 2
5th Decade	10 3	N/A	8 0	5 3	5 5	4 5	4 1
Acres Overstory Removal (1,000 Acres)							
1st Decade	22 3	N/A	10 5	9 6	8 6	6 3	5 8
5th Decade	0 2	N/A	0	0	0	0	0
Acres Uneven-aged Mgmt (1,000 Acres)							
1st Decade	N/A	N/A	4 1	5 2	5 7	6 4	5 0
5th Decade	N/A	N/A	4 4	5 8	6 1	6 8	5 7
Size of Average Tree Harvested (dbh, inches)							
1st Decade	N/A	N/A	22	22	22	22	22
5th Decade	N/A	N/A	16	16	16	16	15
10th Decade	N/A	N/A	14	14	14	16	16
Average over 150 year planning horizon	N/A	N/A	16 9	17 1	17 0	17 5	17 8

1/The Max PNV benchmark (with Management Requirements) is not a viable alternative, so is not directly comparable to the detailed alternatives Benchmarks were not updated to current technical and legislative changes which would change most resource outputs slightly If the Max PNV (with MR) benchmark was updated to 1990 conditions, it is estimated that ASQ and PNV outputs would be reduced by approximately 3-4 percent However, this benchmark remains suitable for making generalized comparisons to other alternatives

2/Changes in jobs (+515) and income (+$13 0 MM) for the No Change Alternative were projected assuming the potential yield (269 7 MMBF) displayed in the 1979 Timber Resource Plan would be harvested Jobs and income estimates were calculated in a comparable fashion to the other alternatives The 1979 Timber Resource Plan projected an increase of 266 jobs and $5 9 million, these estimates were generated employing different economic assumptions and methodology, and are not comparable to the jobs and income estimates presented for all other alternatives

TABLE S-3 (continued) Indicators of Response of Alternatives to Planning Issues and National Concerns (Average Annual Outputs)

Indicators of Response	Alternatives (In order of decreasing present net value) Max PNV (W/MR)	No Change NC	B-Mod	F	A	Preferred I	C-Mod
Big-Game Habitat							
Big-Game Use (Thousands of Wildlife and Fish Users Days)							
1st Decade	N/A	N/A	121 7	119 8	117 9	121 7	115 3
5th Decade	N/A	N/A	121 7	128 7	128 7	139 6	137 0
Habitat Effectiveness Index (Elk)							
1st Decade	N/A	N/A	56	55	54	56	53
5th Decade	N/A	N/A	56	59	59	64	63
Summer Elk Populations (1,000 Elk)							
1st Decade	N/A	N/A	13 4	13 2	13 0	13 4	12 7
5th Decade	N/A	N/A	13 4	14 2	14 2	15 4	15 1
Winter Elk Populations (1,000 Elk)							
1st Decade	N/A	N/A	5 7	5 6	5 5	5 7	5 4
5th Decade	N/A	N/A	5 7	6 0	6 0	6 5	6 4
Big Game Cover Quality (Index 0 5 low, 1 0 high)							
1st Decade	N/A	N/A	62	62	62	64	64
2nd Decade	N/A	N/A	56	59	61	66	70
Winter Range Enhancement (1,000 Acres)	0	0	0	0	0	0	35 1
Winter Range Maintenance (1,000 Acres)	0	0	76 6	194 1	0	177 4	115 8
Road Management							
Miles of Timber Purchaser Road Construction							
Decade 1	N/A	74	81	80	81	62	49
Decade 5	N/A	N/A	9	4	5	9	7
Miles of Open Roads							
1st Decade	N/A	N/A	6,500	6,500	6,500	6,500	6,500
5th Decade	N/A	N/A	6,500	5,400	5,400	4,550	4,550
Total Mileage of System Roads							
Decade 1	N/A	N/A	9,381	9,370	9,380	9,188	9,059
Decade 5	N/A	N/A	10,111	10,002	9,953	9,729	9,413
Riparian Areas and Fisheries							
Permitted Grazing Use in Riparians (1000 AUMs)							
Decade 1	N/A	N/A	23	23	36	22	18
Decade 5	N/A	N/A	23	23	36	22	21
Grazing Strategies Proposed for Unsatisfactory Riparian Areas - Shrub Utilization	N/A	67% Entire Pasture	0-20% Within Stream Corridor	0-20% Within Riparian Pasture	67% Within Unsat Pasture	0-35% Within Riparian Pasture	0-40% Entire Pasture
Anadromous Fish Harvest in First Decade (Thousands of Pounds)	N/A	N/A	40 1	34 4	26 8	37 0	44 9
Smolt Habitat Capability Index (1000s of smolt)							
Decade 1	N/A	N/A	196	168	131	181	219
Decade 5			297	277	154	326	399
Roadless Area Management							
Unroaded Areas Assigned to Unroaded Management (Thousands of Acres)	0	54 2	13 3	67 0	59 2	79 9	193 1
Management of Pine Creek FPA	Developed	Roadless	Available for development	Available for development	Roadless	Available for development	Wilderness Recommendation

E. Affected Environment

The Malheur National Forest's zone of influence is an area of magnificent scenery, remote small communities, and a rural western lifestyle found in few parts of the country today

Summary of Changes Between Draft and Final Environmental Impact Statement

Several important changes concerning the affected environment on the Malheur National Forest have occurred since the Draft Environmental Impact Statement was released Below, is a summary of those changes

Management Indicator Species This section has been expanded to include several additional species as indicators of management practices In addition, three species have been dropped as management indicators for the Malheur National Forest

Habitat Effectiveness Index (HEI) The use of HEI modeling has replaced cover to forage ratio descriptions for describing the elk habitat conditions on the Forest HEI incorporates physical and biological indicators of cover quality and spacing, open road densities, and forage quantity and quality (winter range) into the big-game habitat affected environment Cover to opening ratios are still used to describe the amount of an area providing satisfactory, marginal, and total cover to non-cover areas.

Soils Update This section has been expanded to include in greater detail historical events that have impacted the soils resource on the Forest Grazing, logging, road construction and mining impacts are described and soil conditions on the Forest are given in greater detail.

Wild and Scenic Rivers The discussion of wild and scenic rivers has been updated to reflect a re-analysis of Forest river systems completed following public comments As a result of this river reassessment, two rivers on the Malheur National Forest have been found to meet the criteria for wild and scenic status eligibility

Water Resources Update Greater detailed discussion of the water resources, water quality monitoring, and the affected environment of the Malheur National Forest are given in this chapter. Climate, topography, and their interactions (including potential management implications) are discussed in more detail

Riparian Ecosystems Update This section has been developed more fully since the Draft Environmental Impact Statement Riparian zones are defined, their importance expanded upon, and management implications are highlighted

Social and Economic Setting

Over 60 percent of Grant County's population lives in the John Day Valley, within a 15-mile radius of John Day The major lumber mills are located in this area which is considered the trade center for the county Similarly, over 60 percent of Harney County's population resides within a 10-mile radius surrounding the county's largest community, Burns

Population growth has been generally slow but steady Severe fluctuations have occurred in the past These fluctuations often parallel the health and viability of the national timber market Population projections for the area indicate a future growth rate averaging less than two percent per year

The economy is heavily resource-based, with logging and ranching as the principal sustaining industries. Federal, State, and local government also are major employers in the area More than half the area under consideration is publicly owned, the majority of which is National Forest Thus, the Malheur National Forest resource use and management decisions can have a major effect on the economic well-being of the area.

Institutions and establishments normally associated with small western intermountain ranching and logging communities are in evidence Most of the towns have a post office, cafe, bar, grocery store, service station, equipment dealership, elementary school, and several churches Many have several of the above establishments

The people of the area retain many of the social values which characterized the early American West These values include an affinity for the outdoors, independence, and freedom from control and regulation These deep-rooted values were forged during an era of abundance and unrestricted use of natural resources and along with the economic history of the area have a strong bearing on local attitudes toward the use and management of public lands and natural resources

As the local majority and power structure, native residents tend to stress the concept that Forest activities should be primarily influenced by the needs and desires of the local majority The opposing view holds that management of the Forest should be more responsive to national needs and values These conflicting viewpoints tend to reflect the means of influence with which each group is familiar and successful

The principal private sector industries in Grant and Harney counties are timber, livestock, and retail trade These three sectors account for approximately 50 percent of total area employment The other major sector of the economy is government (local, state, and federal), accounting for about 35 percent of the area's employment

Timber Management

When people think of a forest, they think of trees Forested land is important for wildlife habitat and provides beautiful scenery Forests provide a setting for a variety of recreational activities Trees are also important to the economic well-being of local communities and play a role in regional and national economics as well

There are three major timber categories of commercial importance on the Forest ponderosa pine, mixed conifer, and lodgepole pine The typical stand of trees on the Forest today is a two-story stand The overstory consists of large, mature trees while the understory consists of a variety of tree species at various ages The Malheur National Forest produces wood products from a land base of 1,459,422 acres, 1,174,878 acres are forested of which 1,039,868 acres have been identified as tentatively suitable for timber production

Insect-caused tree mortality on the Forest has been heavy during the past five to ten years In particular, this has been due to an infestation of mountain pine beetle (*Dendroctonus ponderosae*) affecting over one million acres on the Malheur, Wallowa-Whitman, and Umatilla National Forests Annually, mortality on this Forest from this insect has been about 4 million board feet of timber, primarily in lodgepole pine

The Douglas-fir tussock moth and western spruce budworm will continue to pose the potential of cyclic epidemic infestations This potential increases as the species mix of trees on the Forest shifts from predominantly ponderosa pine to predominantly fir species under the current emphasis on removing pine overstories and managing the fir understories (until these stands are regenerated at which time a more natural mix of ponderosa pine and fir species will occur) This potential for future outbreaks will decrease as more fir stands are intensively managed with full stocking-level control (Brookes, 1985) The maintenance of insectivorous bird populations will also help prevent epidemic levels of destructive insects Surveys conducted by Forest pest management personnel in 1988 indicated that the spruce budworm population is now declining Using past epidemics as an indicator, it appears that the recent epidemic is declining

The principal projections used in developing long-range plans and programs for management of the National Forests are contained in the Forest and Rangeland Renewable Resources Planning Act (RPA) Assessment and 1984 Update These projections focus

on the situation for the long term (50 years) and do not necessarily recognize current short-term regional fluctuations A summary of those projected RPA trends (year 2030) for timber supplies follows

Total projected national softwood demand (represented as probable harvests) would rise 24 percent from 9 6 billion cubic feet in 1980 to 11.9 billion cubic feet in 2030 In the Douglas-fir subregion, projected annual demand from 1980 to 1990 was about 2 3 billion cubic feet per year Demand would then decline slightly to 2 billion cubic feet per year for the rest of the 50-year period (US Department of Agriculture, 1984)

Prices for National Forest timber are expected to increase over the next 50 years at an average annual rate (real) of 1 percent This price increase will result from several supply/demand forces in the national marketplace, including declining supplies of high-valued old growth and rising demand for raw material for manufacturing This is particularly true for the Malheur National Forest, where inventories have shown substantial amounts of mature ponderosa pine and mixed conifer timber

The supply potential under varying management strategies was presented in the Forest Analysis of the Management Situation (AMS) There are three major influences on the potential supply level the number of acres available for harvest, the intensity of management on those acres, and the harvest flow schedule (nondeclining flow or departure). Current management direction would result in a potential supply of about 260 million board feet (45 million cubic feet annually through 2018), if fully funded A high-investment strategy could generate an annual supply of 285 million board feet (50 million cubic feet through 2018)

In recent years (1980-87), approximately 248 million board feet of National Forest timber has been harvested annually (includes Umatilla and Ochoco National Forest harvests within Grant and Harney counties, based on Oregon State Department of Forestry Annual Harvest Reports) Six major sawmills are presently located within the Forest's zone of influence, and several sawmills in adjacent counties purchase Malheur National Forest timber (varying levels)

Presently, the potential supply of Malheur National Forest timber and other wood fiber exceeds recent harvest levels (1980-87 average) However, there have been pressures from local and outside sources to increase the amount of timber sold to a level approaching the Forest's potential supply level Therefore, it can be assumed that there will be an increase in demand for products from the Forest

Overall, the efficiency of the Malheur National Forest timber sale program is very good with a substantial net cash flow A review of the Forest's timber sale costs and receipts for the period 1979 through 1985 revealed that the Forest has had a positive cash flow in each of these years and over the total time period from the sale of National Forest timber.

Big-Game Habitat

The most abundant and popular big-game species occurring on the Forest include mule deer and Rocky Mountain elk During the past decade elk populations have steadily increased to a current summer population of about 6,600 elk (Greg Hattan, Oregon Department of Fish and Wildlife, personal communication, August 1986) Approximately 2,865 elk winter on the Malheur National Forest Current annual Rocky Mountain elk harvest is estimated at about 2,000 animals and for mule deer at 4,000 animals Demand for elk hunting experiences is expected to increase

Habitat Effectiveness modeling developed specifically for the Blue Mountains by Jack Ward Thomas and others will be used to estimate the effects of habitat manipulation on elk. Habitat effectiveness variables including cover spacing and quality, road density, and forage quantity and quality (winter range) are analyzed by the model Population levels

are not directly related to the Habitat Effectiveness Index (HEI) due to the influence of many factors, including hunting and the quality of winter range habitat from outside of the Forest

Presently, the Forest-wide estimated Habitat Effectiveness Index for elk is 51 The cover to opening (formerly cover forage) ratio is estimated at 56 44, with approximately 13 percent in satisfactory cover This Forest-wide assessment does not include the spatial distribution of the cover to openings In specific geographic areas, satisfactory cover exceeds 20 percent of the Forest land area In others, particularly the southern-most winter ranges, satisfactory cover is known to be less than 5 percent of the Forest landscape Conditions that either provide too much or too little cover may cause the Habitat Effectiveness Index to lower Size, spacing and quality of cover stands are important factors in the assessment of elk habitat quality Forage quantity and quality plays an equally important role in meeting elk habitat requirements, especially in winter ranges

Riparian Areas

Riparian areas are ecosystems identified by dominant vegetation that requires unbound water. They consist of lakes, perennial streams and seasonal streams, floodplains and wetlands, moist areas such as meadows, springs, seeps, bogs, and wallows, and quaking aspen stands A critical portion of the total riparian area is labeled the "riparian area of influence" (i e , the transition area within the riparian management area and the upland vegetation) The area of influence contains trees which may provide shade, contribute fine or large woody material to the stream channel, terrestrial insects to the stream, and habitat for the wildlife associated with the riparian management area Riparian areas create well-defined habitat zones within the much drier surrounding areas, they are more productive in terms of total numbers and variety of wildlife species, they are rich in producing plant material, and they are a critical source of diversity within the Forest While riparian areas are a minor proportion of the overall area of the Forest, they are disproportionately important

Stream margins frequently contain highly productive timber sites Cattle utilize the vegetation in riparian meadows more heavily than other areas The relatively gentle topography makes riparian zones attractive for road locations Recreationists concentrate their use in riparian areas and scenic values are often high In addition, wildlife use riparian zones more than any other habitat type Of the 365 species which occur in the Blue Mountains, 214 (per Table III-9) are either directly dependent on riparian zones or utilize them more than other habitats Riparian zones along rivers and streams are frequently used as migration routes by wildlife, particularly by deer and elk traveling between summer and winter ranges Normally, gold placer deposits are located in riparian areas which could conflict with riparian area management objectives

A comprehensive inventory of riparian areas is scheduled for the first ten years of the implementation period of the Forest Plan The inventory will be a coordinated effort between all the resource areas (watershed, fisheries, range, and wildlife) to insure that all riparian related resources and values are evaluated The inventory will be conducted according to the publication *Managing Riparian Ecosystem (Zones) for Fish and Wildlife in Eastern Oregon and Eastern Washington* An inventory of what has been called unsatisfactory riparian areas was prepared for this Forest planning effort It was based primarily on the Watershed Improvement Needs (WIN) Inventory and some professional judgement of streams lacking adequate shade It is a first attempt to recognize riparian areas needing attention in order to determine the necessary funding to correct the problems The WIN inventory is not a "riparian area" inventory although it is a part of a riparian area inventory. It is the watershed portion that documents unstable streambanks and gullies It does not include the shrub, fish habitat, or shade portion of a complete riparian area inventory From the WIN Inventory and professional judgement on several streams, 235 stream miles were determined to be in less than satisfactory riparian condition This is a conservative estimate The total number of miles is expected to increase as the more complete riparian area inventory is completed in the next ten years The

Malheur has an aggressive watershed improvement needs program Each District utilizes both appropriated and KV funds to complete projects. Many of the inventoried problem areas that exist today will be corrected through the watershed improvement needs program WIN projects are prioritized and presented in Appendix A of the Forest Plan Logging practices, roads adjacent to streams, insect outbreaks, and fire can influence shading and streambank stability The largest impact on stream temperature and stability on the Malheur National Forest appears to be the reduction of hardwoods caused by ungulate grazing With few exceptions, the majority of the gullies on the Forest are also the result of the loss of the stabilizing root system caused by a reduction in the hardwood community

Roadless Areas

Under the Roadless Area Review and Evaluation (RARE) process, completed in 1973, roadless areas were identified on the Malheur National Forest A second evaluation of the roadless areas (RARE II) was initiated in 1976 and completed in 1979 This process identified roadless areas on the Malheur National Forest that are being considered for roadless area management in this planning process

With the conclusion of RARE II in January 1979, one area within the Forest boundary did not receive full public review This area, Pine Creek, was recommended for further evaluation.

The majority of two of these areas were added to the wilderness system by the Oregon Wilderness Act of 1984 Monument Rock (6240) and Strawberry Addition (6238)

The Oregon Wilderness Act of 1984 specified that the remaining 18 areas not be reviewed for wilderness designation during this planning process, except for Pine Creek These areas may be managed for the purpose of providing semiprimitive recreation opportunities, which would maintain their suitability for future wilderness review

F Net Public Benefits and Resource Tradeoffs

Maximizing net public benefits while responding effectively to the issues, concerns, and opportunities and meeting environmental standards is a goal of the Forest planning process Net public benefits is the overall value to the Nation of all receipts and positive effects (benefits) minus all expenditures and negative effects (costs)

Present net value, a dollar measure of economic efficiency, is one method of measuring the quantifiable economic aspects of net public benefits In general, an alternative with the highest present net value generates more price benefits relative to total costs than other alternatives

The goal of each alternative is to respond effectively to one or more issues while maximizing cost efficiency or present net value Achieving the goals of varying alternatives requires "tradeoffs" among resource outputs Some alternatives are similar in terms of the benefits and tradeoffs involved This is because the management emphases for some resources (e g., timber management and the retention of old growth) are strongly competitive. On the other hand, management emphases for wilderness, visual quality, and undeveloped recreation opportunities are strongly complementary

The developed alternatives reflect a wide range of resource emphases and, as a result, produced a wide range of present net values and resource tradeoffs. The wide range is needed to obtain a basis for identifying the effectiveness of responses to issues while, at the some time, trying to maximize present net value which is the quantifiable indicator of the level of public net benefits

Present net value of all alternatives is displayed in Table S-4. Alternative NC would have the highest present net value of all alternatives considered in detail, however, this alternative is not strictly comparable to the other alternatives because of different methods

of formulation Alternatives B-Modified, F, and A (listed in order of decreasing present net value) are all alternatives which have comparatively high timber harvest levels, these harvest levels result in higher present net value than alternatives which would manage the timber resource for lower yields (i e , Alternative C-Modified) Alternative I has a moderate level of timber harvest and a corresponding moderate level of present net value. The differences in present net value among Alternatives B-Modified, F, A, and I are generally due to the effects of different mixes of management strategies for resources such as range, wildlife and fish, visual, and roadless areas while maintaining a fairly similar timber management strategy As timber management strategies are constrained to satisfy other resource considerations, present net value reductions occur For Alternative C-Modified, the timber harvest level is lower than Alternatives B-Modified, F, A, and I which generally accounts for the low present net value of this alternative (primarily due to the goal in this alternative of growing a larger ponderosa pine product)

TABLE S-4: Present Net Value and Discounted Benefits and Costs of Alternatives
(Million Dollars - 1982)

Alternative (Ranked in order of decreasing PNV)	Discounted PNV	Change	Discounted Benefits	Change	Costs	Change
Max PNV (w/MRs)	472.6		774 3		301 7	
		- 90 9		- 144 7		- 53 8
NC (No Change)1/	381.7		629 6		247 9	
		- 31 2		+24 4		+55 6
B-Mod	350.5		654 0		303 5	
		- 22.2		- 42 3		- 20 1
F	328 3		611.7		283 4	
		- 28.1		- 34 4		- 6.3
A	300 2		577.3		277.1	
		- 43 6		- 58 8		- 15 2
I (Preferred)	256 6		518.5		261 9	
		- 130 2		- 150 6		- 20 4
C-Mod	126.4		367 9		241 5	

1/The No Change Alternative is based on the 1979 Timber Resource Management Plan This was not an integrated resource management plan and not all resource uses and outputs were valued Consequently, there are differences between the economic assumptions underlying the present net value calculations of the No Change Alternative and of all other alternatives which makes comparisons unreliable

G Adverse Environmental Effects Which Cannot be Avoided Should the Proposal be Implemented

Implementation of the preferred alternative would result in some adverse environmental effects. The severity of the adverse effects can be minimized by adhering to the direction in Forest-wide and management area standards in Chapter IV of the Forest Plan

Some adverse impacts will unavoidably occur to soils, mature and old-growth-dependent wildlife species, riparian vegetation, fish habitat, cavity-nesting species habitat, some recreation experiences, and some cultural resources

Some temporary impacts will occur to insect-dependent birds and air quality Most impacts will be within acceptable limits

H Relationship Between Short-Term Uses of the Human Environment and Enhancement of Long-Term Productivity

The long-term productive capability of all resources depends on maintaining soil stability and fertility, including keeping the soil in a non-compacted condition that is conducive to plant growth The long-term effect on soil productivity of activities such as prescribed burning, whole-tree utilization, and soil compaction are not fully understood

I. Irreversible and Irretrievable Commitments of Resources

Some irreversible and irretrievable commitments of resources would occur in all alternatives

To varying degrees, roadless and wilderness characteristics will be altered, land will be lost to timber production, and some loss of wildlife habitat will occur Additionally, mineral wealth will be removed from the Forest and some loss of cultural resource sites will occur.

J Significant Cumulative Effects Which Cannot be Avoided

Implementation of any of these alternatives will result in unavoidable significant cumulative effects. These effects include 1) limited loss of site productivity on some acres, 2) changes in stand composition and seral stage, 3) reduction in areas suitable for semiprimitive recreation experiences, 4) reduction in areas suitable for future designation as wilderness, 5) fewer areas which provide a natural-appearing landscape, 6) reduction in diversity of the vegetation available as forage in riparian areas, and 7) alteration to cultural resource settings, spatial relationships, and the sites and objects themselves

The environmental impacts discussed above are explained in greater detail in Chapter IV (Section E 19) of this Environmental Impact Statement